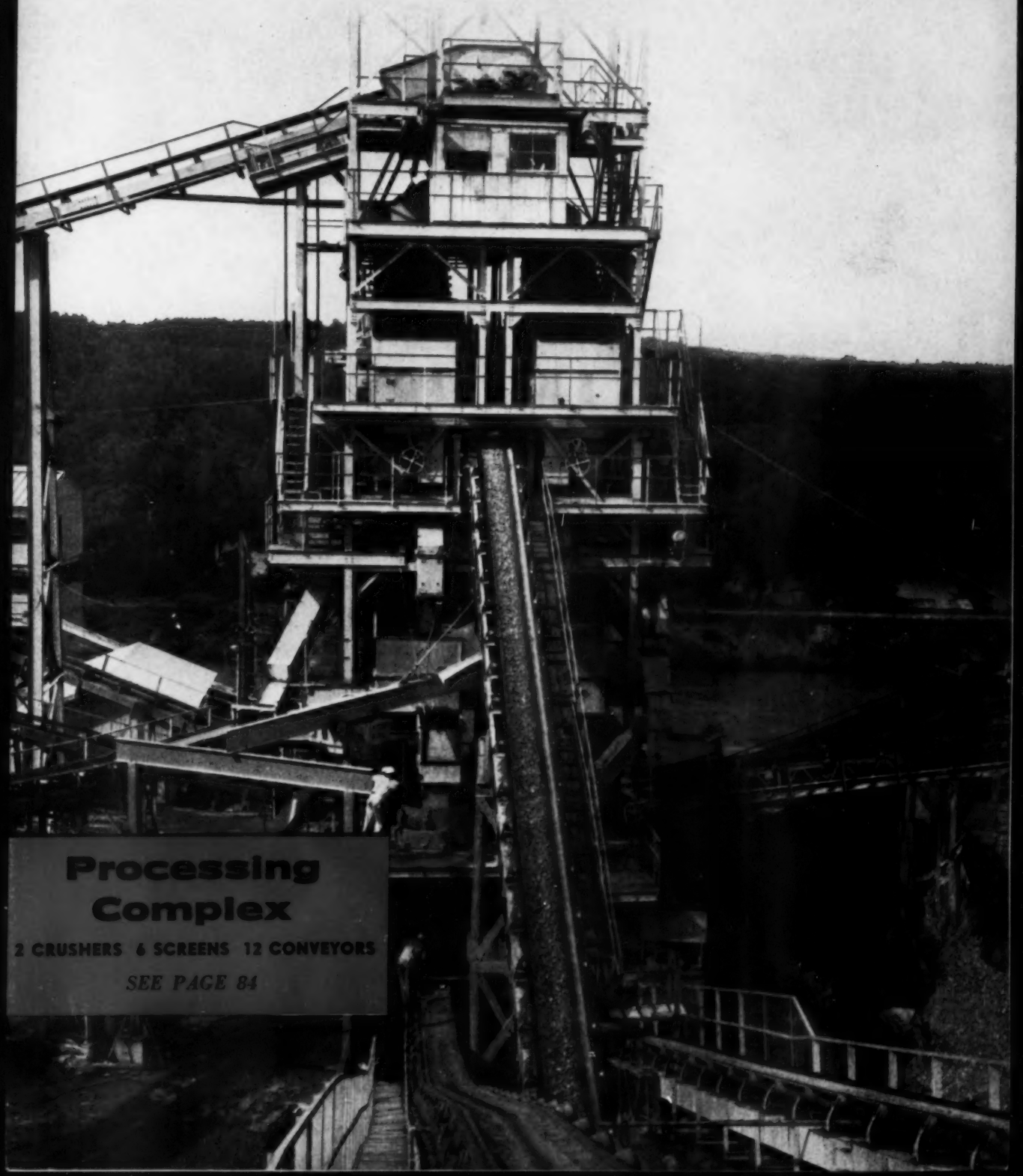
PIT and QUARRY

THE BASIC MAGAZINE IN A BASIC INDUSTRY

November 1959



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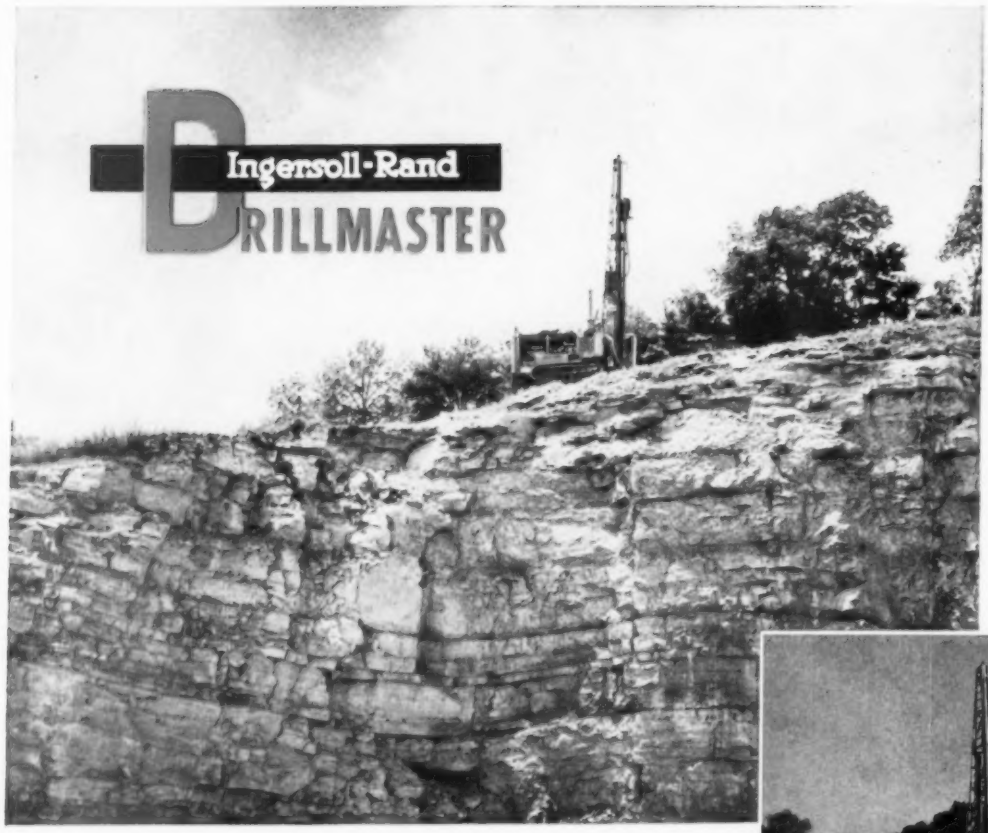

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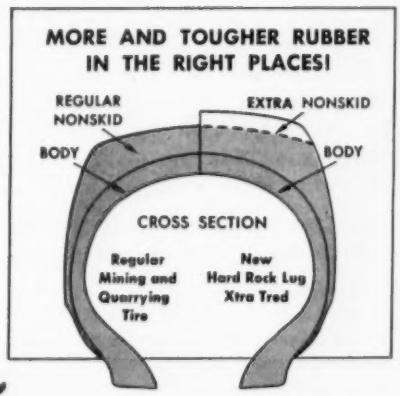

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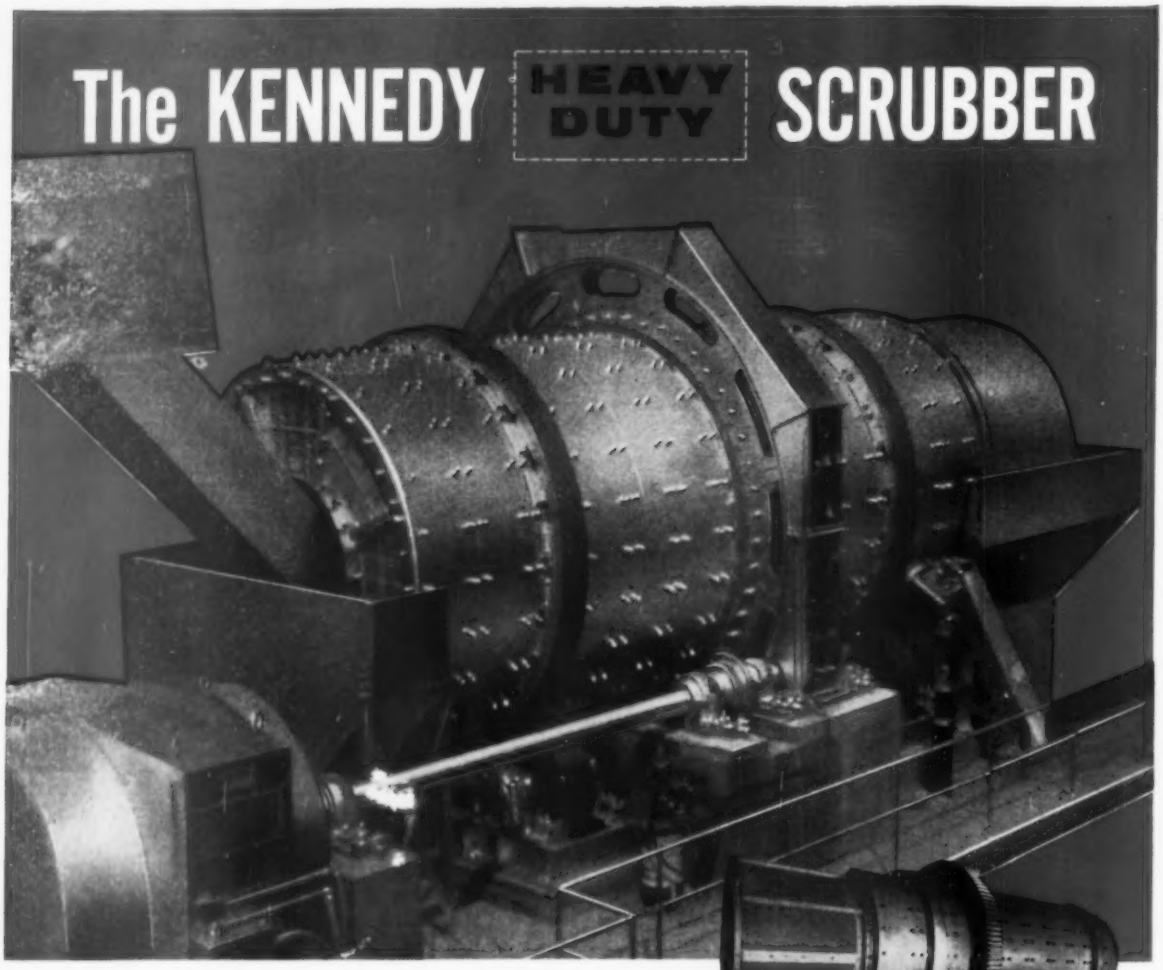

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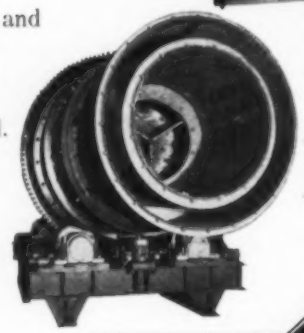

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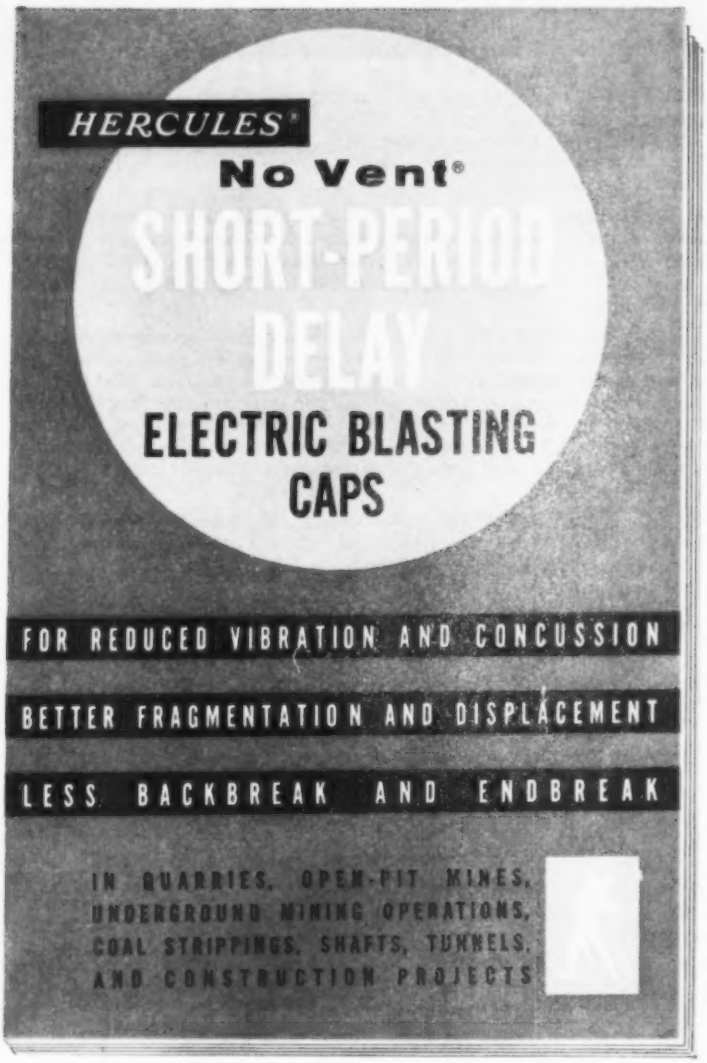
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- Scalping and scrubbing screens
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- Apron feeders
- Grizzlies
- Bins and hoppers

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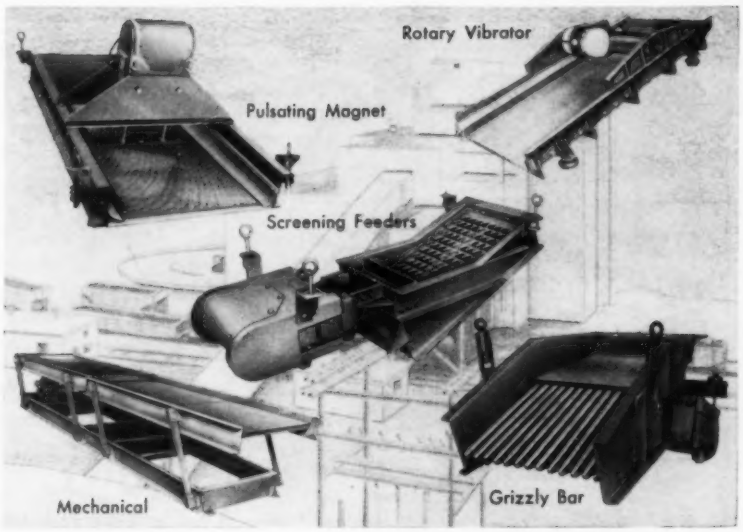

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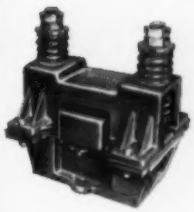

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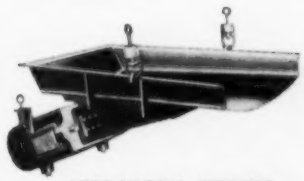

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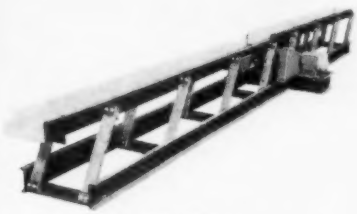

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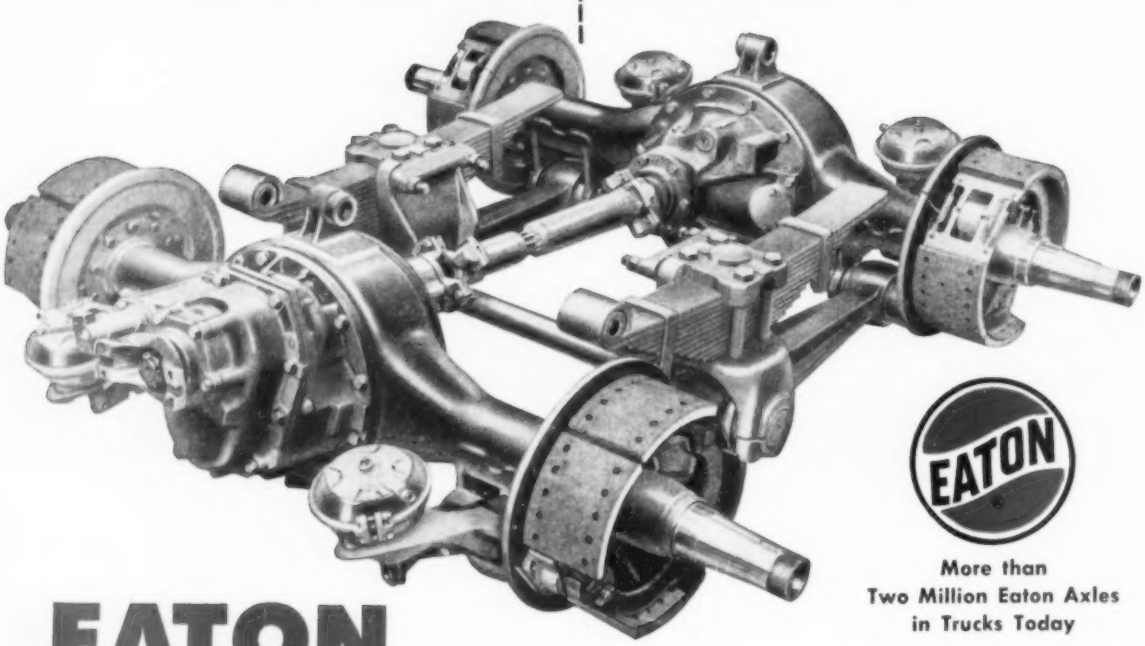

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Washington News Letter

By S. HERBERT UNTERBERGER

TO HELP in its evaluation of economic trends and the establishment of its policy, the Federal Reserve Board makes an annual survey of consumer finances. Among the questions it asks of sample families are inquiries about their future spending plans, particularly on large items such as automobiles, furniture, and houses. The board is interested in such data on the very reasonable assumption that the first thing required before a sale can be made is a consumer who wants to buy. The results have been not only illuminating but also remarkably accurate.

In assessing future trends, economists in Washington and elsewhere are reviewing the following results from the surveys of the last five years rather carefully. The data have been presented in terms of the proportion of families planning to buy the particular item. The accompanying table presents the data for 1955 through 1959 for four major categories: new automobiles, used automobiles, furniture and major household appliances, and non-farm houses (new and used).

Analysis of these data suggests that unless the families are frustrated by other forces, a far higher percent of them will buy houses in 1959 than bought them in 1958. And the same percent will buy as in the years before the 1958 recession. In view of the fact that there are more families now than in those earlier years, the total number of houses sold would be expected to increase somewhat.

This is in contrast to the automobile situation, in which the proportion of families planning to buy new automobiles, while higher in 1959 than in 1958, is still lower than in 1955 through 1957. It should be remembered that this survey was made some time before the current excitement in the automobile market, associated with the introduction of many new kinds of American-made cars, a trend designed to attract more kinds of buyers.

Consumer Plans to Purchase Durable Goods and Houses
Prospective Purchasers as a % of All Policies

Year	Automobiles		Furniture and Household Appliances	Non-Farm Houses, New and Used
	New	Used		
1955	8	7	28	9
1956	8	7	28	9
1957	8	8	29	9
1958	6	10	28	7
1959	7	9	28	9

The figures on the plans to buy used automobiles are interesting, indeed. Although many a businessman was, at the beginning of 1958, quite uncertain about economic prospects in that year, the consumers were keenly aware of the situation. Considerably fewer indicated that they would buy new cars, a purchase associated with an expectation of equal or higher income, while many more of them indicated that they would buy used cars, a purchase associated with an expectation of reduced income.

With respect to furniture and major appliances, virtually no trend is noted.

The housing trend is of great significance and is clearly very encouraging, not only to the economists but also to the politicians, particularly those who are in office and want to stay there.

However, the fact that there are forces at work which may prevent these consumer expectations from being realized causes some concern. The most important force is the stringency in the money markets, which is forcing interest rates up, thereby increasing carrying charges on a newly purchased house.

Aside from the question of absolute price, interest rates on mortgages have in the period of a relatively few years increased from an average of about 4 percent to the current average of around 6 percent. While this 50 percent increase does not necessarily result in a 50 percent increase in all the carrying charges, it does constitute a substantial proportion of the total. This situation may prove to be a substantial deterrent to house sales.

The only offsetting factor has been the recent loosening up of down payment requirements; but to a purchaser who is concerned about monthly carrying charges, or a mortgage lender who is concerned about the possibility of a purchaser being able to carry the house on his current income, the fact that a lower down payment is required only aggravates the problem. It results in a larger mortgage, which is even harder to carry.

The problem of the home purchaser is only a part of the problem which the continuing rise in interest rates is provoking. Recent reports indicate that some businessmen are already adversely affected, while

(*Continued on page 74*)

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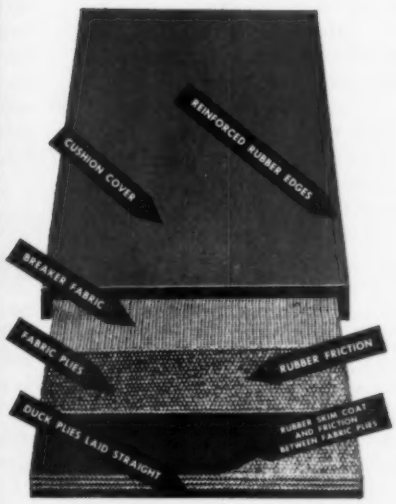

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Labor Developments

Unanticipated Effects of the New Labor Law

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D.C.-Philadelphia, Pa.

ALMOST before the President's signature on the new labor law was dry, reports began coming in of a number of totally unanticipated results. This is reminiscent of the situation which followed the adoption of the Taft-Hartley Act more than a decade ago.

Although that earlier law was years in the making, final passage was sparked by the reaction of the public to the arrogant and inconsiderate actions of John L. Lewis and his Mine Workers Union. Among the achievements which the backers of that law virtually guaranteed it would do would be to "cut John L. Lewis down to size." Now, more than ten years later, there is no evidence that this has been accomplished.

Similarly, the recently enacted law would probably not have passed, at least not in its current form, except for the reaction of the public to the McClellan Committee revelations of corruption in labor unions, particularly in the Teamsters Union, led by James R. Hoffa. Essentially, much of the new law is designed to "cut Jimmy Hoffa down to size." It already appears as though the law might be quite ineffective in this regard.

Among the provisions of that law designed to accomplish this result is the requirement that persons convicted of robbery, bribery, extortion, embezzlement, grand larceny, burglary, arson, rape, assault with intent to kill, assault which inflicts grievous bodily injury, violation of the same law's reporting or trusteeship provisions, or conspiracy to commit any of these crimes are prevented from serving in any union capacity for a period of five years after such conviction or after release from prison.

The union positions which such a person is barred from holding are the following: officer, director, trustee, member of any executive board or similar governing body, business agent, manager, organizer, or in any other employee capacity except those involving only clerical or custodial duties. This list certainly sounds broad enough to eliminate all the "gangsters and hoodlums" found by the McClellan Committee to have infiltrated some labor unions at high levels, to have assumed position of trust, and to have exercised sinister influence over other union officials.

In view of this provision, there was consternation in high places when shortly after the passage of the law, Hoffa announced that his union had made a telephone check of 95 regional offices which employed a total of 7,000 officers and 3,000 clerical employees and found only five who would be barred from office under this presumably rigid requirement. He also pointed out that those five were already on leave of absence, but that their disability under the law would end shortly, and that by next January they would all be able to resume their former positions.

Among the most curious effects is that the passage of this law, designed to clean up the Teamsters, may result in frustrating the efforts of the Board of Monitors appointed by a Federal Court to do the same thing. That Board ordered the removal from office of three local presidents, all of whom had rather extensive criminal records, although their convictions fell far short of their indictments, while their jail sentences were either non-existent or extraordinarily light. It turns out that none of those men would be barred from office under this law, generally because the last conviction was more than five years ago. Teamster lawyers will surely argue that the Board of Monitors has no authority to adopt a more rigid rule than that enunciated by the Congress.

The effectiveness of most of the other legislated rules for cleaning up unions have not yet been subjected to so direct a test. It is significant, however, that so far no union, not even the Teamsters, has threatened to refuse to comply with the multitudinous requirements for reports which are designed to reveal the innermost secrets of union management—or mismanagement. The Teamsters, at least, are confident that this requirement will have no real effect on their growing strength.

Quite different in nature are the unexpected results of the parts of the legislation designed to limit organizational picketing. Because a picket line around an establishment can do so much harm to it, the new law prohibits organizational or recognition picketing in three situations:

1. If a rival union has been legally recognized by the employer.
2. If a valid election has been conducted under the National Labor Relations Act within the preceding 12 months.
3. If a picketing union has not filed an election petition within a reasonable time (not exceeding 30 days after the commencement of picketing).

There was a short reference to the anticipated result under the first of the above situations in last month's *Report on Current Labor Developments*. The possibility has now been recognized more broadly that this

(*Continued on page 77*)

Aggregate for building construction in

PUERTO RICO

Compañia de Ingenieros y Contratistas, Inc., San Juan has most modern

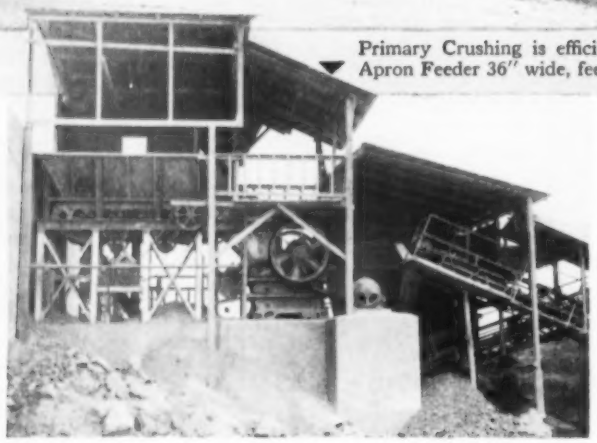
TELSMITH

QUARRY PLANT

◀ For Secondary Crushing—Telsmith Heavy Duty 2-deck Scalping Screen and 48-S Gyrasphere Crusher.

▼ Complete plant view. (Extreme right) Telsmith 3-deck Sizing Screen over bins with 4 Telsmith Bin Gates.

▼ Primary Crushing is efficiently handled by Telsmith Heavy Duty Apron Feeder 36″ wide, feeding Telsmith 25 x 36 Jaw Crusher.



Close to San Juan, Puerto Rico, this most modern, flexible Telsmith-designed plant is crushing $1\frac{1}{4} - \frac{3}{16}$″ stone for building construction. Present production, 50 cu. meters hourly, will increase with improving quarry facilities. The plant's Telsmith equipment—36″ x 12′ Heavy Duty Apron Feeder, 25 x 36 Jaw Crusher, 5′ x 12′ Heavy Duty 2-deck Scalper Screen, 48-S Gyrasphere Crusher, 5′ x 14′ Vibro-King 3-deck Screen, four 12 x 18 Siquad bin gates—was supplied by General Equipment Corp., San Juan, Telsmith Distributor for Puerto Rico. Send for Bulletin 266.

Q-38-859

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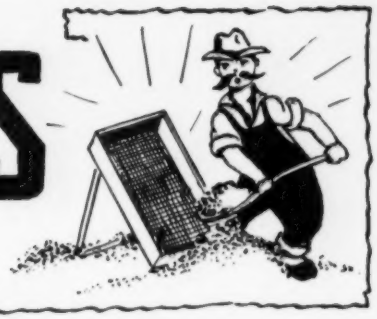


By RAY L. SMITH JR.

ART SUMMERFIELD, number one postmaster in the United States mail menagerie, banned Lady Chatterley's Lover until he was overruled.

The Lady Chatterley ain't a lady, we admit, what with carousing with the gardener, but Mr. Summerfield would best stick with cancelling postmarks and getting the mails out on time instead of sitting around reading novels—on taxpayer's money.

Could it be, that this is one of the reasons why your copy of Pit & Quarry hasn't been delivered on time lately?

We believe, in fact, that most local postmasters do a creditable job of getting the mail through their particular office, in the shortest time possible, but, there are still quite a few places around the U. S., that we'd like to see pay a mite more attention to second class mail. (This includes nearly all popular magazines and trade publications.)

We're the country that has more magazines to read than any other country in the world, so the P. O. Department ought to see to it that they are delivered on time.

Construction Notes

WHAT are little girls made of? The ingredients have changed.

Little girls are made of sugar and spice . . . and foam rubber.

A scion of the foundation garment industry claims that women last year used more than 10 million pounds of foam rubber to round out various strategic points.

What looks like a 36 ain't, he claims. Fact is the average U. S. belle is only around 33-34 up front.

German, Swedish and Italian lassies are often bonafide 36's, but most have too much natural padding around the middle.

The French ladies, so often hailed for fine figures, can boast of more 32's. Orientals are least plentiful, with 30's.

Does all this mean the average femme is a fraud. The foundation man thinks so.

When women get together nowadays, he seems to imply, they compare bustlines instead of wealth.

All this startling information, of course, may come as a shock to the more naive male, who persist in believing what they see.

Some 65 percent of the country's female populace add curves and inches with foam rubber.

It's an ego-deflating thought, men, but two of every three well-stacked ladies who delight the eyes are foam rubber phonies!

Potpourri and Succotash

Next to resolve to reduce, the most difficult resolution to keep is daily to tell your wife she is beautiful and that without her constructive criticism you would be a flop.

What makes some rich people so mean is that they think they are entitled to more happiness than they are getting.

Scientists are spending millions to show us how to fly over the moon or sail under the North Pole, but you are still on your own when it comes to crossing the street.

You might as well keep your mouth shut. If you talk about yourself you're a bore. If you talk about others you're a gossip.

Seems to us that one of life's pleasantest moments is when your children get to the age where you don't have to pretend any longer that you know everything.

He showed up on the job with a blackeye and explained that his wife had given it to him.

"But I thought your wife was out of town this week," commented a friend. "So did I," was the reply.

A three-year-old was struggling with the back button of his long underwear. Finally, he gave up, trotted to his mother and said: "Mommy, open my bathroom door, please."

Sign in a restaurant: "The silverware is not medicine. Don't take it after meals."

The aim of nearly everybody seems to be to get their mail on my desk Monday morning which, consequently, is a crowded day. By Wednesday mail is so scarce that I would welcome even an invitation to subscribe to Time, Life, Fortune, Saturday Evening Post, Atlantic, Look, or Holiday.

A youngster being called down for a poor report card asked: 'What do you think the trouble with me is, Dad —heredity or environment?'—

The British may call it a Grand Tour, but an American Woman in Europe makes it a grand Shopping Tour and cares about little else except comparing the size of her tiny feet to those of the walkative English girls.

General Electric announces . . .

NEW DRAW-OUT DESIGN

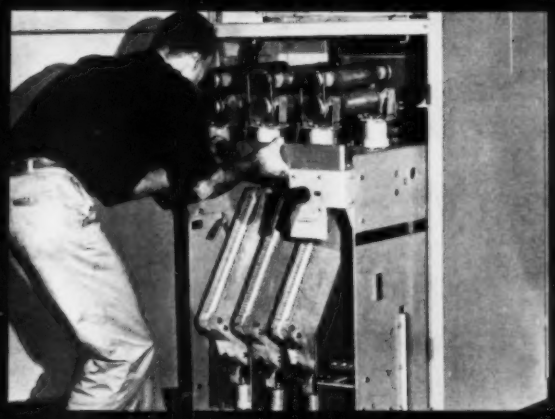
From General Electric comes the all-new draw-out Limitamp control—today's most advanced medium-voltage motor starter. Designed for the control of a-c motors rated 2300 through 4600 volts and up to 3000 hp, this new air-break starter has broad application throughout industry.

Since its introduction in 1941, Limitamp control has established a reputation for being first with the design features that add up to major user benefits. And, today's all-new Limitamp control follows this pattern with a host of design innovations that make for:

Faster installation: When you're ready to roll in the contactor—it can be done easily by one man. And, there are no connections to make—they are made automatically as the contactor rolls into place. There's plenty of space inside the panel for pulling the motor and power cables . . . and making the connections. And, with the new design, floor sills have been eliminated. This means no more grouting, no expensive cement work, simplified lineup with other panels.

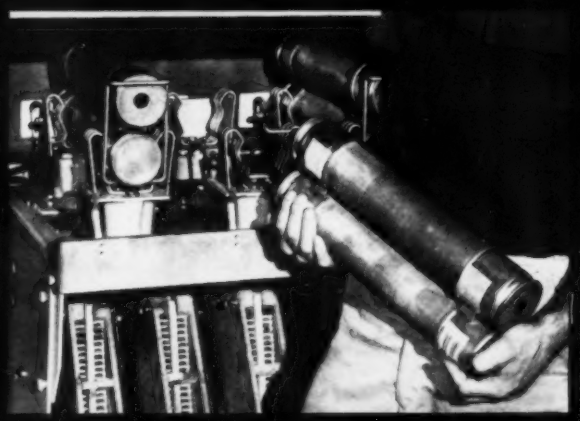
Simpler, safer operation: One handle now controls the complete operation of connecting and disconnecting the starter from the bus and mechanically locking the high-voltage compartment door. A unique interlocking system protects the unit from misuse.

Superior protection: General Electric's new Limitamp



INSTALLS IN HALF THE TIME—Draw-out air break contactor, roomy isolated cable compartments, and increased working space help simplify installation.

LIMITAMP CONTROL IS ISOLATED AUTOMATICALLY—A unique shutter box isolates the starter from high-voltage power when the operating handle is turned to the off position.



INTERRUPTS FAULT IN FIRST ½ CYCLE—Fast-acting, current-limiting fuses interrupt circuit before short circuits cause damage to valuable motors.

NORMAL MAINTENANCE WITH CONTACTOR IN PLACE—All components, including the high-voltage contactor, can be maintained right in the control unit, with complete safety.

LIMITAMP* CONTROL

control utilizes fast-acting current-limiting fuses, ambient-compensated overload relays, and a high-voltage contactor to provide the most "positive" protection for your motors. Proved EJ-2 fuses interrupt a fault in the first ½ cycle, thus reducing damage to valuable motors. The performance of the completely coordinated design has been exhaustively tested in General Electric's high-voltage laboratory to provide the most reliable equipment for your application.

Easier maintenance: Even with these advanced design features, new Limitamp controls are simpler than ever to maintain. All components are accessible from the front for inspection and maintenance—without removing them from the enclosure. A special test circuit is built into each unit—permitting check-out operation before the unit is put into service.

For full information on all-new Limitamp motor control, contact your G-E Apparatus Sales Engineer or Agent today. Or write Sect. 783-10, General Electric Co., Schenectady, N. Y., for Bulletin GEA-6893. Industry Control Dept., Roanoke, Virginia.

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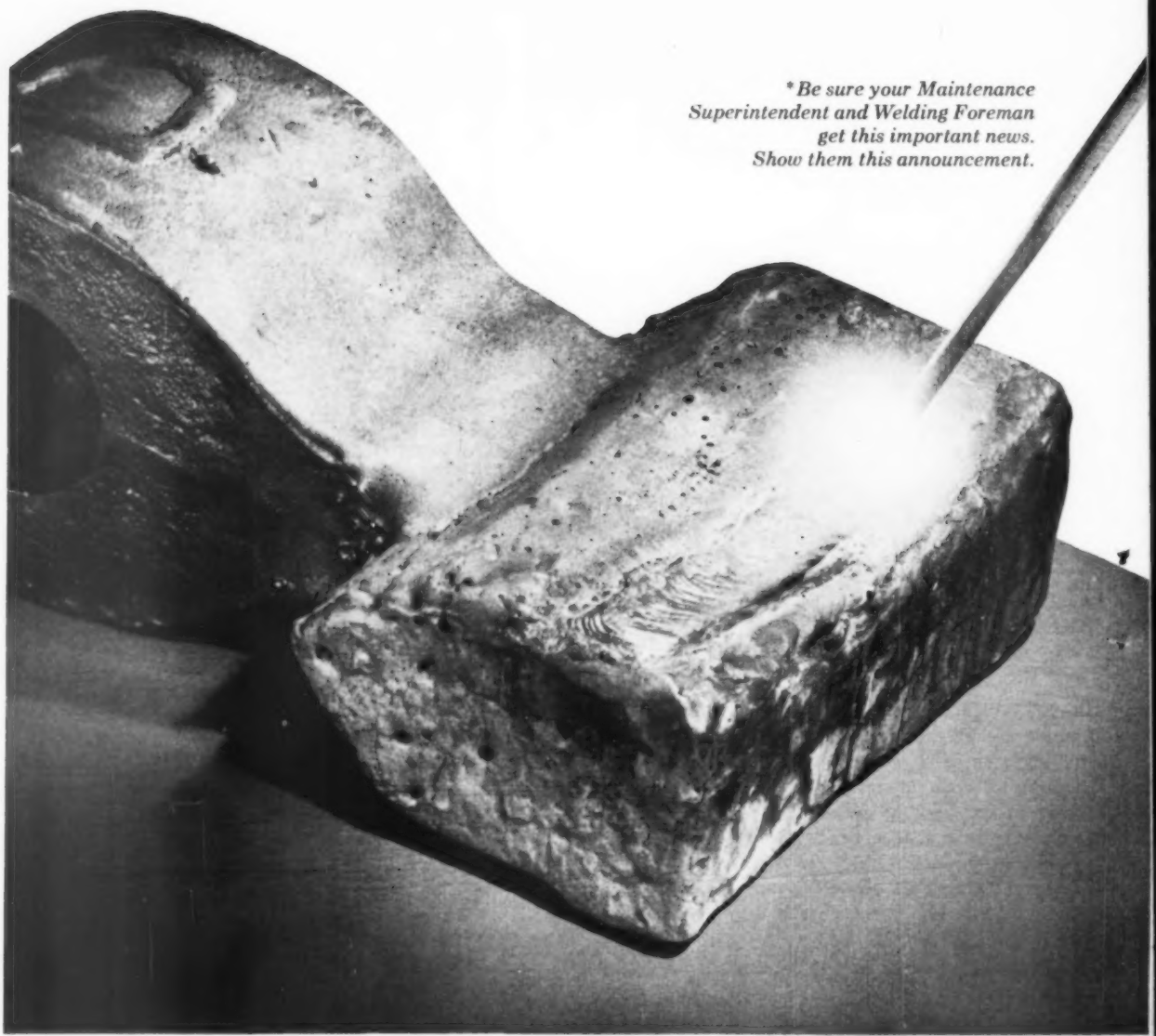
GENERAL ELECTRIC

Enter 16 on card, page 167

*If you know MANGANESE,**
you'll like this new electrode!

STOODY NICKEL MANGANESE

WITH IRON POWDER COATING



**Be sure your Maintenance Superintendent and Welding Foreman get this important news. Show them this announcement.*

Here's a manganese electrode with improved ductility in weld deposits, freedom from cracks and excellent, overall weldability! Deposits possess full austenitic manganese work-hardening properties, matching manganese base metal, and provide physicals unexcelled in the industry! You'll find these new electrodes "tops" both for *joining* of parts and *buildup* of worn areas on all manganese steel equipment.

STABLE ARC—Unusual arc stability is insured by extruding a concentric alloy coating around a solid wire core. The arc runs smooth as silk with freedom from popping and spatter.

EASY RESTRIKE—One strike and the arc takes off effortlessly.

DENSE DEPOSITS—Deposits are free from porosity. Surface is bright and clean.

FAST DEPOSITION—Weldors lay down more metal with less effort—get jobs done quicker and easier.

EASY SLAG REMOVAL—Jobs clean up faster for multiple passes or in preparation for hard-facing overlays.

WHY WAIT? Check the unusual welding properties of this new, *better* manganese electrode today! Compare it with every other manganese electrode you've *ever* used... you'll agree it's the best in the field! Your Stoody dealer will be glad to have you test it on your own job!

PHYSICAL PROPERTIES:

(Based on tests by independent laboratory)

	DC Straight Polarity	DC Reverse Polarity
Tensile Strength	119,000 psi	111,000 psi
Yield Strength	67,000 psi	66,000 psi
Elongation in 2"	55%	37.5%

Hardness—Single pass on manganese steel; as deposited—15 Rc, as work-hardened—48 Rc.
Two passes on manganese steel; as deposited—18 Rc, as work-hardened—48 Rc.

STOODY COMPANY

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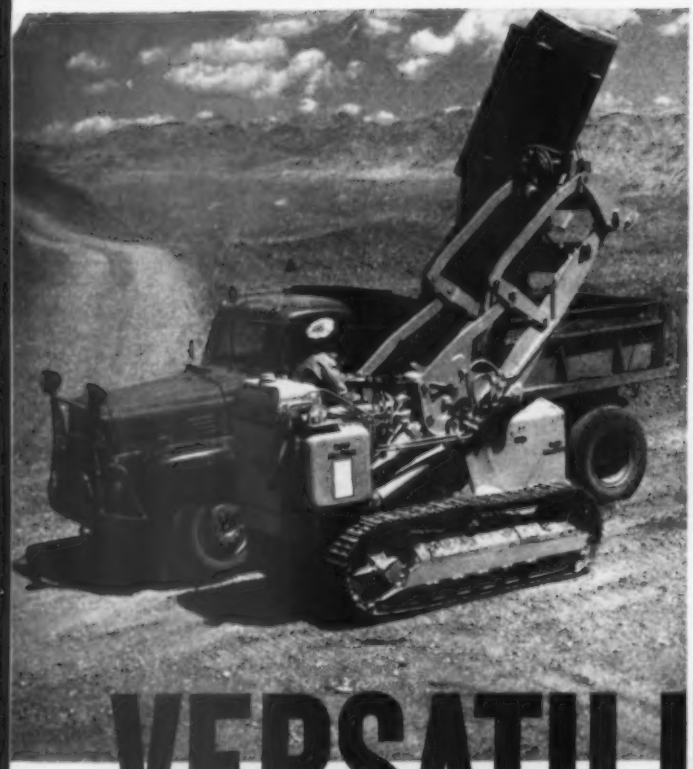
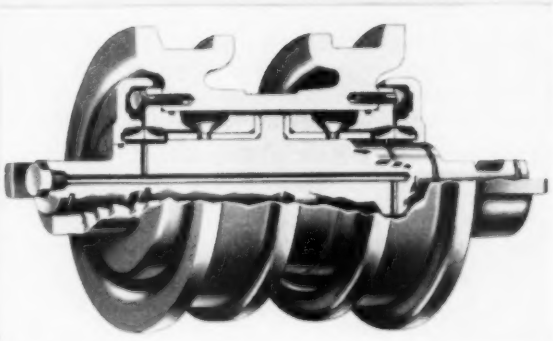
Whittier, California



VERSATILITY SPEED

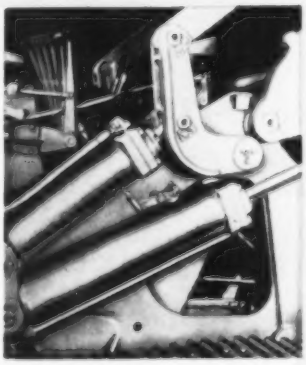
ADD UP TO TOP PRODUCTION

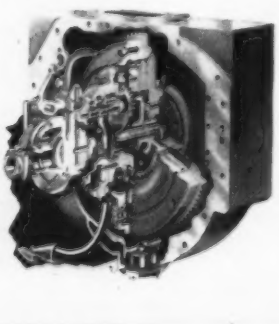
HYDRAULIC TRACK ADJUSTERS standard on the No. 977 and No. 955 —optional on the No. 933. An ordinary grease gun is all that's needed to adjust tracks. Just open the inspection door and apply a few strokes. The hydraulic cylinder does the rest.



LIFETIME LUBRICATED ROLLERS. They need no lubrication servicing until rebuilding. Heat-dissipating oil lubricant is retained by dirtproof floating-ring seal. Eliminate on-the-job roller lubrication. Keep machines on-the-go for longer periods of time.

SMOOTH-FLOW BUCKET CONTROL LEVER. The inside lever is pulled back, lifting the load. It locks in this position until it is kicked out at maximum height by the lift cylinder and linkage. After dumping, both levers are pushed forward. The bucket lowers but only tilts back to an adjustable, preset digging position. Linkage then kicks the outside lever, stopping the bucket tilt.





EXCLUSIVE CATERPILLAR OIL CLUTCH . . . the most advanced clutch design ever offered. Provides up to 2,000 hours without adjustment. This is equal to about 12 months of "adjustment-free" operation. And because wear rate of clutch facing is so slight, down time for clutch repair is almost eliminated.

DEPENDABILITY

IN A TRAXCAVATOR

WHATEVER THE JOB . . . whatever the conditions . . . there's a Caterpillar-built Traxcavator to take charge. Advance design has given this machine a reputation for speed . . . efficiency . . . low operating and maintenance costs. For this is a digging and loading tool; not a tractor attachment.

The line is complete. You get top production from three Traxcavators . . . the No. 933—52 HP, 1⅛ cu. yd. bucket; the No. 955—70 HP, 1½ cu. yd. bucket; the No. 977—100 HP, 2¼ cu. yd. bucket. And there's a complete range of quick-change attachments . . . special buckets, bulldozers, forks, the exclusive side dump bucket and the rear-mounted ripper.

Traxcavators are built to last. They have a heavy steel main frame, welded into a one-piece unit. Box construction track roller frame absorbs the loads and stresses of tough treatment. Lift arms are made to stand up under the strain of heaviest digging conditions.

Traxcavators give you fast action and ease of operation. Excellent stability and balance give better control of the machine. A fast hydraulic system cuts cycle time and increases maneuverability even in close quarters. Visibility is excellent. The high seat puts the operator on "top" of the work. Operator's compartment is uncluttered. Tractor controls are conveniently located for handling ease. Bucket controls are at the right armrest . . . closely spaced for dual operation with one hand.

The reliable Caterpillar Diesel Engine has a fuel-saving injection system and ability for hard lugging. Each engine is matched to the machine for power and bucket size.

All of these features pay off in top production. Let your Caterpillar Dealer help you choose the Traxcavator best suited for your job. Get production facts and figures. And ask for a demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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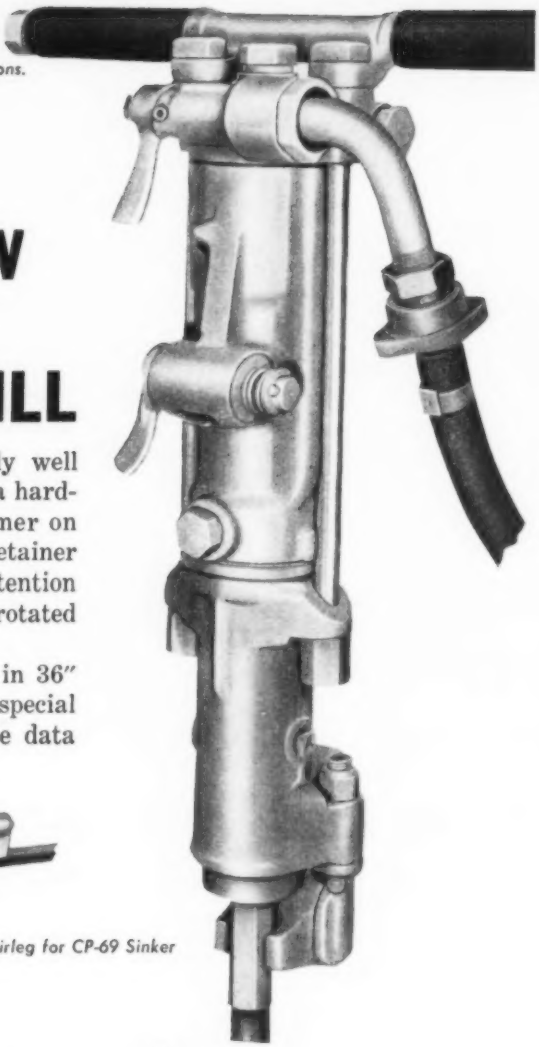
BOOST PRODUCTION AND LOWER COSTS WITH A VERSATILE TRAXCAVATOR

Enter 20 on card, page 167

New CP-69 Sinker has universal backhead for blower-dry, wet and automatic air-water operations.

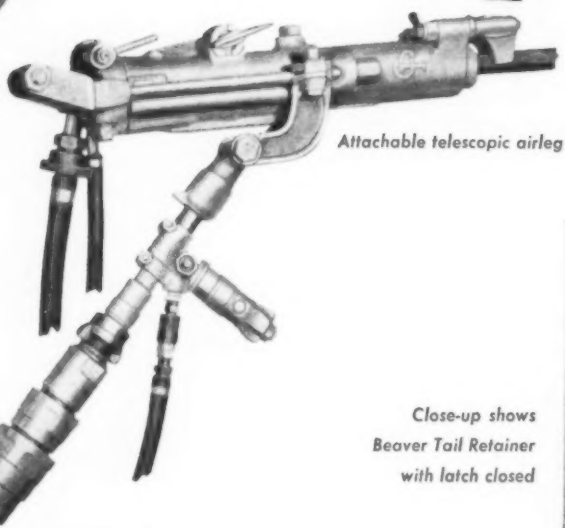


announcing the **NEW HARD HITTING CP-69 SINKER DRILL**

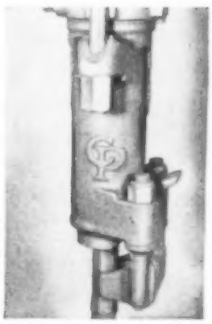
Here's a 55-pound class sinker, exceptionally well balanced, with good hitting power to make it a hard-working down-hole drill *and* a fine performer on airleg work as well. New type beaver tail retainer eliminates retainer springs—improves steel retention and reduces steel breakage. Retainer can be rotated 180° for airleg work.

Airlegs, either integral or attachable type in 36″ or 48″ standard feed and a 72″ telescopic leg for special requirements is available. Write for complete data on the new CP-69 Sinker.

Integral telescopic airleg for CP-69 Sinker



Attachable telescopic airleg for CP-69 Sinker



Close-up shows Beaver Tail Retainer with latch closed

Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

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News of the Industry

Major Expansion Program Of Bestwall Gypsum Co. Progressing on All Fronts

A multimillion-dollar expansion program is progressing on schedule for one of the country's largest manufacturers of gypsum products, Bestwall Gypsum Company of Ardmore, Pa. Three new plants and modifications at two existing facilities are included in the program.

Bids have been received for concrete foundations and slabs for the $5,500,000 Mississippi River-Gulf outlet plant at New Orleans. This plant is the first industry launched along the Mississippi River outlet to the Gulf. The plant, going up on a 30-acre tract, is scheduled for completion by June, 1960.

Grading is completed, foundations are in, and erection has begun on the $4,000,000 Blue Rapids, Kans., plant, which involves both an expansion and a replacement program. The present plant will be abandoned when the land and facilities are inundated by waters of the reservoir to be created by the Tuttle Creek dam; the new plant is above the projected waterline. Bestwall was reimbursed $1,000,000 by the United States Corps of Engineers, builders of the dam, for the cost of land and facilities.

New construction at Blue Rapids, which will result in a 100 percent increase in capacity, will also include facilities for the production of gypsum board and lath. A shaft will connect with the old mine shaft, which is the access to the oldest active gypsum mine west of the Mississippi River, and which taps rich deposits reportedly 99 percent pure. Construction is expected to be completed prior to July, 1960.

A modernization program—set to extend over 18 months, with completion scheduled for late 1960—is under way at the Pryor, Okla., plant. Work on a 200-ft. by 300-ft. warehouse has reached the half-way mark. This structure will feature a wavy roof of thin-shell concrete.

A $7,000,000 Wilmington, Del., plant, approved earlier in the year, is in the engineering stage.

The $7,000,000 gypsum board lath and plaster plant recently completed in Brunswick, Ga., has been enlarged by a $500,000 addition.

At Waukegan, Ill., the National Gypsum Company's wallboard and lath plant is presently being enlarged, so that the facility will have an additional 24,000 sq. ft. of floor space.

Johns-Manville Corp. Acquires Schundler & Co. Through Stock Trade

Formal announcement has been made by spokesmen of the Johns-Manville Corporation and F. E. Schundler & Company, Inc., of the acquisition of the latter firm by Johns-Manville through an arrangement of stock exchange.

Acquisition of the Schundler company will give J-M a supply of crude perlite of high quality and uniformity. It also has facilities for grinding or expanding and screening nonmetallic materials such as limestone, bentonite, vermiculite, and various clays. Schundler operates a perlite mine at No Agua, N. M.

Coming Events

January 18-21, 1960—Cincinnati, Ohio. 58th Annual Convention, American Road Builders Association. Netherland Hilton Hotel.

January 18-21, 1960—Washington, D.C. Board of Directors meeting and Annual Convention, National Limestone Institute. Statler-Hilton Hotel.

January 24-28, 1960—Chicago. Annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

January 28-29, 1960—Roanoke, Va. Annual meeting, The Expanded Clay and Shale Association. Hotel Roanoke.

February 1-5, 1960—Chicago. Committee Week, American Society for Testing Materials. Hotel Sherman.

February 15-19, 1960—Chicago. Combined biennial show, joint convention, National Sand and Gravel Association, and National Ready-Mixed Concrete Association. The Coliseum, and Conrad Hilton Hotel.

February 22-24, 1960—Chicago. 43rd Annual Convention, biennial manufacturers division exposition, National Crushed Stone Association. Conrad Hilton Hotel.

February 22-24—Los Angeles. 40th Annual Convention, National Concrete Masonry Association. Hotel Statler.

August Construction Totals Present Good Showing Despite Lag from Aug., '58

Construction contracts in the United States in August declined 11 percent below the level of the corresponding month of 1958, but the total of $3,083,649,000 was the second-highest ever reported for any August, according to F. W. Dodge Corporation.

The Dodge seasonally adjusted index of construction contracts for August was 258 (1947-49=100), down from 289 in July.

According to George Cline Smith, Dodge vice-president and economist, the decline probably stemmed in large part from the steel strike.

"Undoubtedly the steel strike had some effect," Dr. Smith said, "although it is difficult to measure exactly. There is no evidence that any great slowing of actual construction work occurred in August as the result of steel shortages. But the awarding of contracts for future jobs may well have been held up because of uncertainties over steel deliveries and prices.

"Nearly every category of nonresidential buildings and heavy engineering reported a decline in August, and so did apartment buildings. Single-family houses, on the other hand, gained. This pattern cannot be explained by any underlying economic factors, but it is consistent with the effects to be expected in the current steel situation. Single-family homes are less dependent on steel deliveries than most other types of construction.

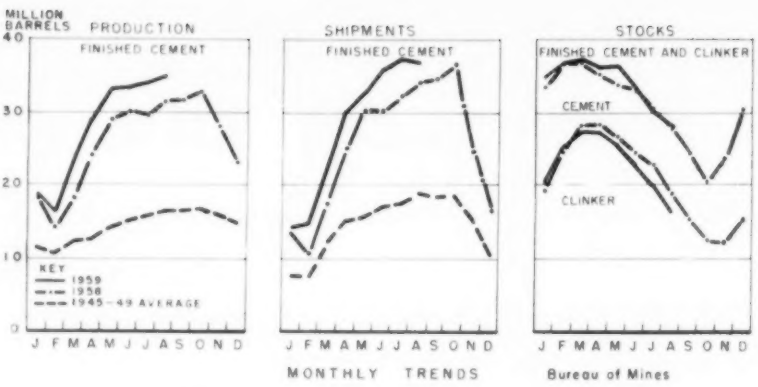
"The August decline should not be viewed too seriously," Dr. Smith said, "since it is largely a matter of timing, and could to a considerable extent be made up later. But the strike is now beginning to pinch, and if it is continued for many more weeks, it will become progressively harder to make up the time lost."

The single shining light in nonresidential building contracts in August, according to Dr. Smith, was in the hospital category, up 50 percent over August, 1958. Every other nonresidential category declined, and the nonresidential total of $961,101,000 was down 11 percent from that of a year ago.

Residential building contracts in August totaled $1,551,224,000, up 7 percent from August of last year. The contracts covered 116,269 dwelling units, an increase of 2 percent over last year. Both the dollar volume and number of units in apartments declined, but this was more than offset by an increase in single-family houses.

Heavy engineering contracts in August amounted to $571,324,000, a decrease of 39 percent from August, 1958. Highway contracts were down more than 50 percent, and all other public works and utilities categories other than water supply and sewerage systems also declined.

Cumulative totals for the first eight months of 1959, and the percentage changes from the corresponding period of last year, were as follows: total construction, $25,573,909,000, up 7 percent; nonresidential building, $7,841,631,000, up 3 percent; residential building, $12,115,843,000, up 28 percent; and heavy engineering, $5,616,435,000, down 16 percent.



—August, 1959, Finished Portland Cement—

SUMMARY—Production of finished portland cement in August, 1959, as reported to the U. S. Bureau of Mines, totaled 34,800,000 barrels, an increase of 10 percent over August, 1958. Mill shipments in August, 1959, totaled 36,836,000 barrels, an increase of 8 percent over August, 1958. Stocks of 28,104,000 barrels of finished portland cement on hand were 1 percent higher than those on hand August 31, 1958. Clinker production during August, 1959, totaled 31,107,000 barrels, an increase of 11 percent over the August, 1958, figure.

PRODUCTION—One hundred and sixty-seven (167) plants in 38 states and Puerto Rico reported a production of 34,800,000 barrels of finished portland cement during August, 1959, compared with 31,675,000 barrels produced in August, 1958.

Production of clinker during the month of August, 1959, was 31,107,000 barrels, compared with 27,907,000 barrels during the same month last year.

High-early-strength portland cement in August, 1959, totaled 1,103,000 barrels, an increase of 59 percent over the August, 1958, production.

Prepared masonry cement production in August, 1959, of 1,522,000 barrels increased 10 percent over the August, 1958, production.

SHIPMENTS—Mill shipments of finished portland cement for August, 1959, totaled 36,836,000 barrels, compared to 34,188,000 barrels in August, 1958.

In August, 1959, shipments were higher in 18 districts and lower in 5 districts than in August, 1958. The greatest decreases were in the Georgia-Florida, Puerto Rico, and Michigan districts. The greatest decreases were in the eastern Missouri-Minnesota-South Dakota, and Kansas districts.

Mill shipments of high-early-strength portland cement totaled 1,310,000 barrels in August, 1959, a 19 percent increase over the 1,103,000 barrels shipped in August, 1958.

Mill shipments of prepared masonry cement in August, 1959, totaled 1,562,000 barrels, an increase of 6 percent over the 1,473,000 barrels shipped in August, 1958. Over one-half of these shipments were from mills in the northern states east of the Mississippi River. Prepared masonry cements are shown in 376-lb. barrels, although they are sold in barrels of varying weights.

STOCKS—Mill stocks of 28,104,000 barrels of finished portland cement were on hand August 31, 1959, an increase of 1 percent over the 27,883,000 barrels on hand August 31, 1958. Stocks of clinker on hand August 31, 1959, totaled 16,005,000 barrels, a decrease of 15 percent from the 18,872,000 barrels on hand August 31, 1958.

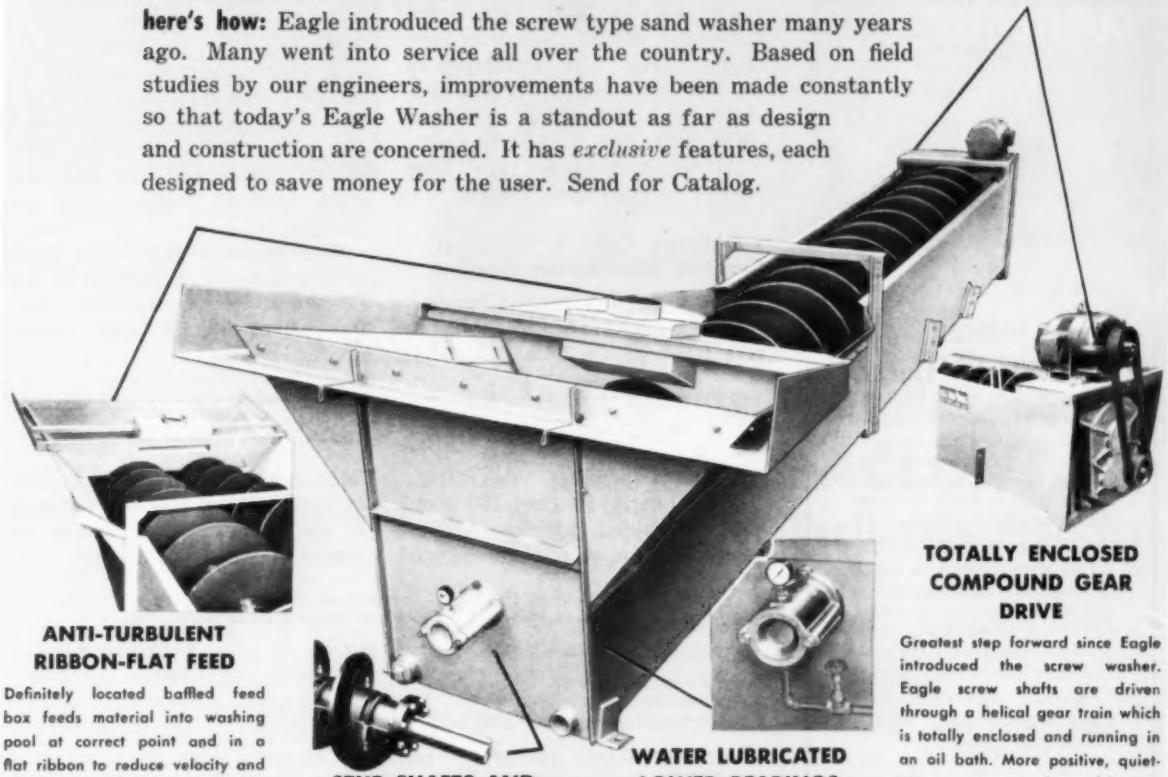
FIRST EIGHT MONTHS—For the January-August period of this year, the volume of production of finished cement amounted to 224,599,000 barrels, compared with 195,254,000 barrels for the same period last year. Total shipments (Jan.-Aug., 1959) were 225,303,000 barrels, compared with 194,507,000 barrels last year. ●

WAY-AHEAD DESIGN

of **Eagle** Washer-Classifier-Dehydrators

SAVES MONEY FOR YOU!

here's how: Eagle introduced the screw type sand washer many years ago. Many went into service all over the country. Based on field studies by our engineers, improvements have been made constantly so that today's Eagle Washer is a standout as far as design and construction are concerned. It has *exclusive* features, each designed to save money for the user. Send for Catalog.



ANTI-TURBULENT RIBBON-FLAT FEED

Definitely located baffled feed box feeds material into washing pool at correct point and in a flat ribbon to reduce velocity and turbulence. Gives wash water currents rising from bottom of tub a chance to separate lighter specific gravity material before screws start material up the drainboard to the discharge. Flared sides bolted—for easy low cost transportation.

Single Screws in 12 Sizes
Double Screws in 4 Sizes
Capacities 30 to 500 TPH.

STUB SHAFTS AND SOLID RIBBON SCREWS

Screw flight shafts on Eagle Washers are supported by Stub Shafts at lower end. Screw flight shaft and stub shaft are bolted together using flanges. Affords ease of replacement and positive alignment. Solid screw flights have replaceable Ni-Hard shoes. Adequate power and the design strength of solid ribbon screws eliminate need for screw lifting device—permit proper placement of feed box.

WATER LUBRICATED LOWER BEARINGS

Years ago Eagle abandoned grease or oil lubricated lower bearings because gritty water seeps its way into bearings causing undue maintenance. Marine type bearings lubricated by water under pressure are used in Eagle Washers and have greatly reduced bearing maintenance costs. Users praise this money-saving feature.

TOTALLY ENCLOSED COMPOUND GEAR DRIVE

Greatest step forward since Eagle introduced the screw washer. Eagle screw shafts are driven through a helical gear train which is totally enclosed and running in an oil bath. More positive, quieter, power-conserving drive—no misalignment possible. No dust, dirt, or slurry can contaminate the gears to cause undue wear as with open bevel and spur gears. Saves money, too, by greatly reducing maintenance. It's easy to change screw speeds using this drive to attain maximum efficiency.

SINCE 1872

EAGLE IRON WORKS

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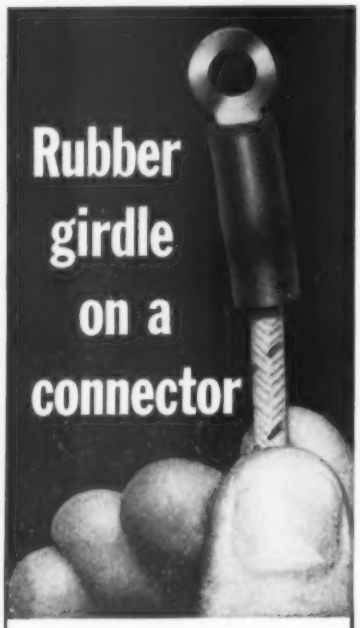

...another reason why

Autocar is the "World's Finest"

Every terminal clip on Autocar wiring gets *double* protection: each one is pressure-applied, dipped in solder, then gets a rubber boot or girdle to cover the exposed soldered joint.

All wires exposed to weather get an extra covering of lumex or braid. Individual fuses or circuit breakers protect important circuits. Cab wiring is independent—connected by two oil- and dirt-proof terminal blocks.

"Extras" like these help make Autocar the "World's Finest" heavy hauler.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pennsylvania

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Huron Portland Cement Slates Production Increase In Finish-Grind Dept.

Construction will begin soon on facilities to increase by more than 15 percent the finish-grind capacity of the Alpena (Mich.) mill of Huron Portland Cement Company, National Gypsum Co. subsidiary.

The new facility, expected to be completed by mid-1960, will add 7,000 bbl. of finish-grind, bringing daily capacity of 53,000 bbl.

Previously a large harbor development project had been announced. This work is designed to increase the mill's shipping capacity at Alpena by an estimated 20 percent. New silos, a new slip, a deeper harbor, and new boat loading facilities are included.

Pittsburgh Coke & Chemical Erecting Distribution Plant

Pittsburgh Coke & Chemical Company's new $250,000 distribution plant on the Ohio River between Marietta and Parkersburg is now under construction. The terminal will have a storage capacity of 25,000 bbl. of bulk cement.

Among the major items of equipment will be three storage silos, a self-unloading barge, truck loading and weighing facilities, and docks.

Permanente Distributing Plant To Be Expanded by 43 Percent

In addition to Permanente Cement Company's new plant on Oahu (See PIT AND QUARRY, October, 1959, page 37), this firm is planning a 43 percent expansion of its cement distribution plant in Honolulu. Storage capacity at Iwilei Pier 32 will also be raised from 80,000 bbl. to 125,000 bbl., and truck load-out facilities will be enlarged.

The Honolulu distribution plant will continue to be supplied by the Permanente plant near San Jose, Calif., until the new facility begins production.

Lime Sales in July, 1959

Domestic sales of open-market lime in July, 1959 (691,750 short tons), decreased from the previous month's output, according to reports released by producers to the Bureau of Mines, United States Department of the Interior. The decrease included all categories of lime.

Lime Sold by Producers[1] in the United States, in Specified Periods of 1958-59, by Types and Major Uses in Short Tons

	JUNE	JULY		JANUARY-JULY	
	1959	1959	1958	1959	1958
By types:					
Quicklime	686,045[2]	509,854	436,548	4,402,260[2]	3,140,122
Hydrated lime..	184,188[2]	181,896	166,752	1,178,885[2]	1,074,127
Total	870,233[2]	691,750	603,200	5,581,145[2]	4,214,249
By uses:					
Agricultural:					
Quicklime	4,656	3,261	3,356	41,111	27,686
Hydrated lime ..	7,554	5,463	7,164	74,810	80,323
Total	12,210	8,724	10,520	115,921	108,009
Construction:					
Quicklime	8,716[2]	7,584	12,406	78,649[2]	75,295
Hydrated lime..	97,801[2]	97,780	84,303	565,480[2]	516,346
Total	106,517[2]	105,364	96,709	644,129[2]	591,641
Chemical and other industrial:					
Quicklime	458,673[2]	393,171	292,388	2,906,013[2]	2,185,962
Hydrated lime..	78,833[2]	78,653	75,285	538,595[2]	477,458
Total	537,506[2]	471,824	367,673	3,444,608[2]	2,663,420
Refractory (dead-burned dolomite)	214,000[2]	105,838	128,398	1,376,487[2]	851,179

[1]Also includes a quantity of captive tonnage. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.
[2]Revised figure.

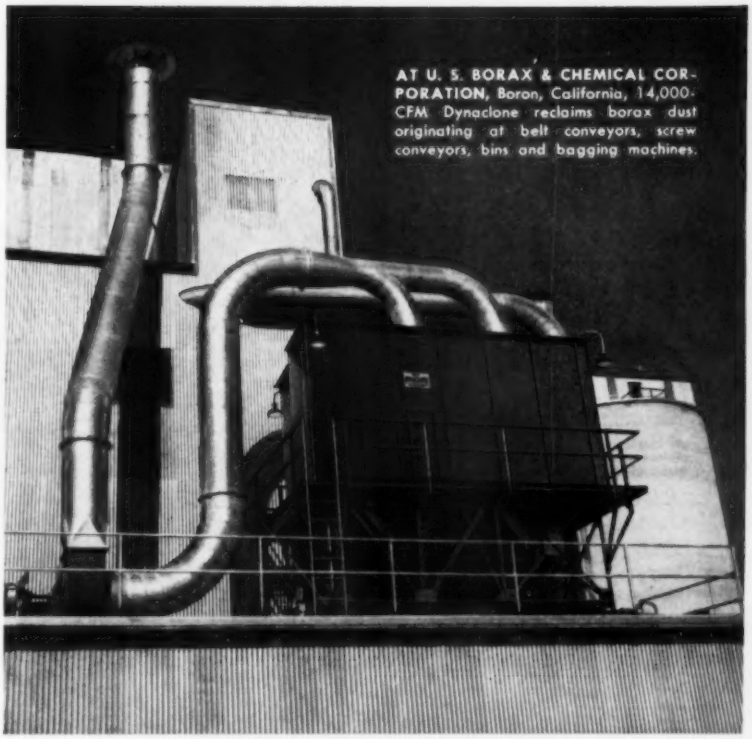
Our Cover Picture

● The impressive structure on the front cover of this issue is the final screening tower of the Superior Stone Company's new 1,000-t.p.h. crushed stone plant near Augusta, Ga. Impressive though it is, this tower seems too compact to house two crushers, six screens, and the feed or discharge ends of 12 belt conveyors. This well-engineered installation makes it possible to produce a wide variety of sizes at one time and also provides maximum flexibility. Storage piles and tunnel reclaiming conveyors on both sides of this structure facilitate quick loading out of single or blended sizes. For a complete description of this important new plant, see p. 84.

Acquisition Now Official — Volunteer a Part of Ideal

More than 80 percent of Volunteer Portland Cement Company stock has been deposited for exchange with Ideal Cement Company stock, giving the needed final approval for the acquisition of the former firm by Ideal (see PIT AND QUARRY, September, 1959, p. 32). As of the close of business, September 28, Volunteer officially became a subsidiary of Ideal.

The following officers have been elected for Volunteer: president, Charles F. Lewis (continuing in this capacity); executive vice-president, M. O. Matthews (executive vice-president of Ideal); vice-president and sales manager, J. W. C. Boykin (continuing in this capacity); vice-president and treasurer, E. Earl Evans (continuing in this capacity); secretary, C. B. Flick (secretary and treasurer of Ideal); assistant secretary and assistant treasurer, John Hanahan (formerly secretary and assistant treasurer of Volunteer).



AT U. S. BORAX & CHEMICAL CORPORATION, Boron, California, 14,000-CFM Dynaclone reclaims borax dust originating at belt conveyors, screw conveyors, bins and bagging machines.

Constant Suction! Complete Collection!

SLY DYNACLONE®

The Dust Filter for Continuous Processes

Just turn this dust filter on and forget it. The Dynaclone operates continuously, 24 hours a day. It maintains constant, uniform suction at dust sources, reclaims all the dust to prevent air pollution and damage to plant equipment.

The Dynaclone has *new* "Resist-O-Wear" filter bags (patent pending) that give as much as three times longer bag life . . .

It has a new roller cleaner for simplified automatic self-cleaning. Resilient rubber rolls form a positive dust seal as each row of bags is cleaned by atmospheric air drawn in by the main operating fan.

And it contains more cloth per cubic foot of filter than any other make . . . greater filtering capacity with smaller space requirements.

Learn the many reasons why the Dynaclone represents a new high in dust filter efficiency . . .

Send for 36-Page Catalog 104

SEE THE DYNACLONE in Space 73, the Chemical Show, New York Coliseum, Nov. 30-Dec. 4

SINCE 1875 SLY

THE W. W. SLY MANUFACTURING CO.

4745 TRAIN AVENUE • CLEVELAND 1, OHIO
OFFICES IN PRINCIPAL CITIES

OVERSEAS LICENSEE: ANDREW AIR CONDITIONING LTD., LONDON S.W. 1, ENGLAND

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AT McCOOK, ILLINOIS

Consumer Company's 5 cubic yard P&H Model 1500 Electric Excavator

WITH VULCAN MATERIALS COMPANY

AT CHATTANOOGA, TENN.

Chattanooga Rock Products Company's 4½ cubic yard P&H Model 1400 Electric Excavator

One P&H always sells another because

P&H "PROFIT·TONS" reduce loading costs all day...every day

Up to 30% higher bail pull for more uniform dipper speed in the pile—faster swing—exceptional physical strength of P&H welded construction—greater job availability all add up to as much as 10% more production, lower loading cost per ton and *more net profit* for owners of P&H Electric Mining Excavators.

P&H "Profit-Tons" are the end product of these *exclusive* P&H design principles:

MAGNETORQUE® . . . the most productive digging motion drive known for electric excavators. This patented P&H hoist drive electro-magnetically transmits the full digging power of an A.C. hoist motor direct to the dipper *without motor generator set conversion to D.C. current.* It gives higher bail pull, greater dipper fill factor and automatic impact protection to the digging machinery.

ELECTRONIC CONTROL . . . this patented P&H control accomplishes the quickest work motion reaction time known on electric shovels. Control maintenance expense is reduced as much as 80% by elimination of all moving parts for a completely closed circuit system.

In addition, with P&H—and only with P&H—do you get the service assurance of single source responsibility. P&H manufactures their own electrical as well as mechanical components—*designed specifically for electric excavator service.* Write Dept. 558A, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

P&H LINE:

Electric Excavators: 3½ through 10 yds.
Diesel Excavators: ½ through 3½ yds.
Truck Cranes: 10 through 80 tons

P&H MINING EXCAVATORS

HARNISCHFEGER CORPORATION
Construction & Mining Division
Milwaukee 46, Wisconsin

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Marquette's Annual Report 15-Time Trophy Winner In Cement Industry Group

For the 15th consecutive year Marquette Cement Manufacturing Company is to be honored for excellence in annual reporting. The independent board of judges in the *Financial World* Annual Report Survey has announced its finding that the company's 1958 annual report is best in the cement industry.

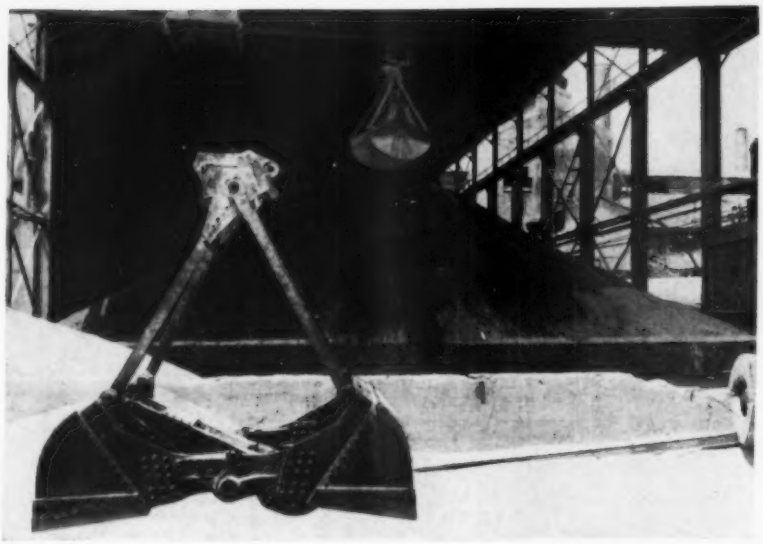
Accordingly, a bronze Oscar of Industry trophy will be presented to Marquette's President W. A. Wecker at the Annual Awards Banquet in the Grand Ballroom of the Hotel Astor in New York. This trophy will put Marquette in possession of 20 such awards, including two gold Oscars for the best of all annual reports, three silver trophies for the best of all manufacturing company reports, and 15 industry awards.

Heart Seizure Proves Fatal To J. R. Hill of Gifford-Hill

John Rutledge Hill, 67, board chairman of Gifford-Hill & Company, Inc., died in Dallas after having suffered a heart attack.

Mr. Hill was active in expanding his firm to include plants in three states for processing railway ballast, sand, gravel, and slag.

Nationally known in the industry, Mr. Hill served at one time as president of the National Sand and Gravel Association and of the Texas Highway Branch of the Associated General Contractors.



• Difficult-to-dig slag and clinker, limestone, and gypsum are handled easily by this 2-line lever-arm-type bucket during cement processing operations at the Neville Island plant of Pittsburgh Coke and Chemical Company. Operating from an 8-ton capacity overhead traveling crane, the medium weight clamshell unit—made by Blaw-Knox Company, Blawnox, Pa.—is reeved with three parts of line. The bucket weighs 8,560 lb., and is equipped with cast alloy steel lips. A Style "A" equalizer prevents twisting of the bucket and permits suspension so that the direction of opening is in the desired relationship with the axis of the holding and closing drums on the scene. One 1½-cu. yd. bucket and two 3-cu. yd. units are used in this part of the operation.

Engineer Shortage? – Who Says?

From time to time statements are issued and news stories are published on either the shortage or over-supply of engineers. Some of these stories can be startling. Too often they are based on insufficient information.

The Engineering Manpower Commission—a committee of Engineers Joint Council, representing 20 national engineering societies and 300,000 of the nation's engineers—always has the up-to-date facts. For figures, such as the number of engineers needed, freshman enrollments, number of graduates, current salaries—phone, wire or write—

Engineers Joint Council
29 West 39th St., N. Y. 18, N. Y.
For information, call Pennsylvania 6-9220

• This challenging poster, designed by the Engineers Joint Council, refers interested persons to a reliable source for information on the much publicized—but not necessarily accurate—statements frequently made about the engineering profession. The intelligent thing to do is to learn the facts, rather than to accept statements which may or may not be true.

Aggregate Plant Scheduled For Rapid City, S. D., Firm

Pete Lien and Sons, Rapid City, S. D., recently awarded a contract for a $125,000 modern aggregate plant in that city.

The new facility, described as a secondary aggregate plant, will produce all sizes of products for pit run gravel for highway base cores, specification rock for concrete, sized sand for concrete block, specification rock for asphalt plants, and various sizes of chip material.

STEPHEN FOTI JR. has been promoted to the position of vice-president of operations for Ideal Crushed Stone, Inc., and the Acme Concrete Corporation, both of Miami, Fla.

Sack, Bulk Delivery by Truck Set Up by Arkansas Cement

Truck shipment of cement in bulk and sack by its own fleet was recently inaugurated by the Arkansas Cement Corporation, Foreman, Ark.

Both flatbed and bulk tank trucks are being utilized to facilitate delivery to customers in the firm's primary trade territory, which is comprised of Arkansas, Louisiana, Texas, and Oklahoma. The trucks will also permit its cement to be delivered directly to job sites off existing rail lines. The company recently held a fleet driver school.

A home office site has been selected, and three additions to the board of directors have been announced for the new Oklahoma Cement Company, now constructing a $6,500,000 dry-process plant in Pryor, Okla. The home office will be in the First National Bank building at Tulsa, Okla. Russell F. Hunt, H. A. Eddins, and E. Fred Johnson, all of Tulsa, have been named as directors.

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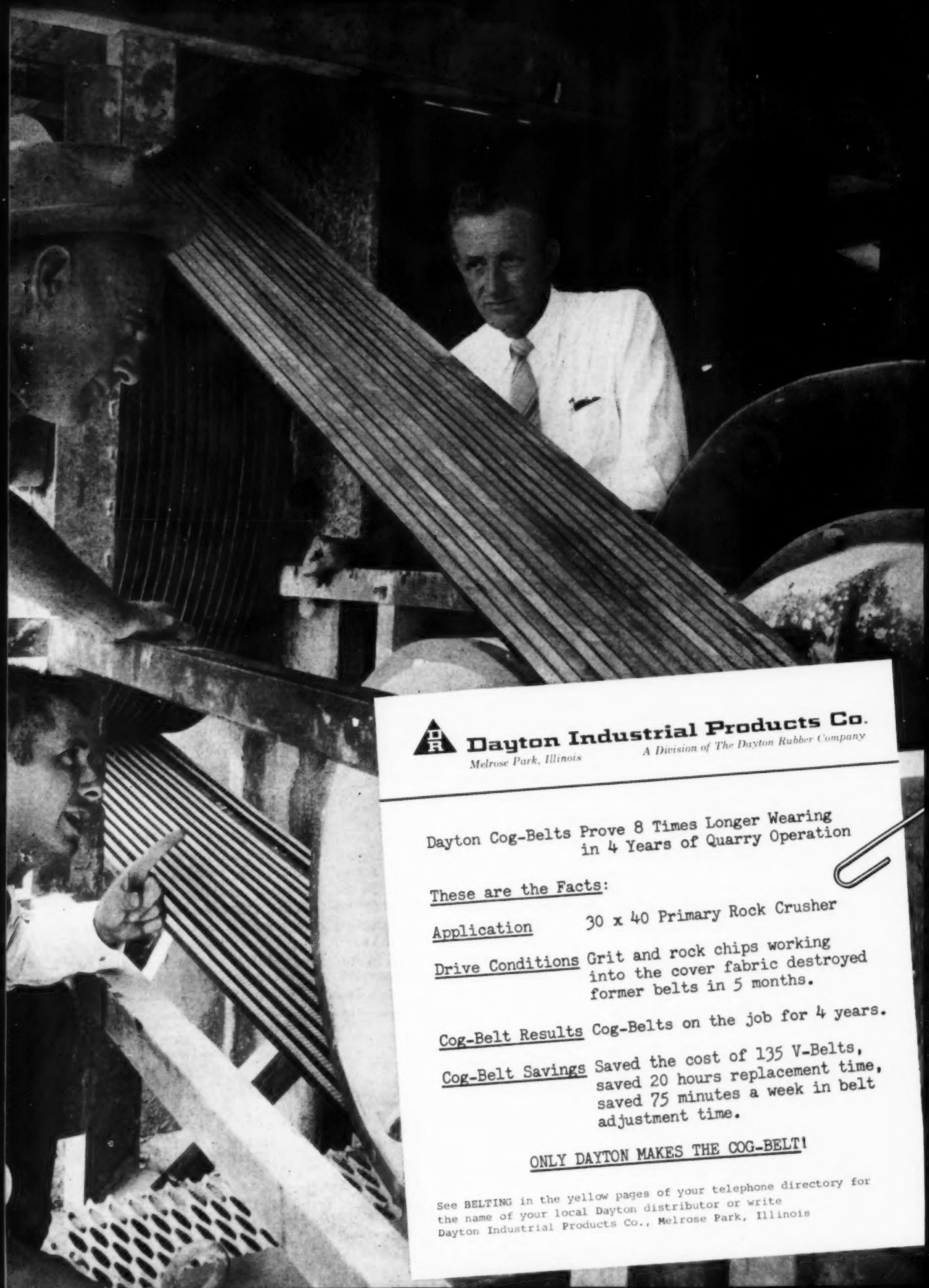


Dayton Industrial Products Co.
A Division of The Dayton Rubber Company
Melrose Park, Illinois

Dayton Cog-Belts Prove 8 Times Longer Wearing in 4 Years of Quarry Operation

These are the Facts:

Application — 30 x 40 Primary Rock Crusher

Drive Conditions — Grit and rock chips working into the cover fabric destroyed former belts in 5 months.

Cog-Belt Results — Cog-Belts on the job for 4 years.

Cog-Belt Savings — Saved the cost of 135 V-Belts, saved 20 hours replacement time, saved 75 minutes a week in belt adjustment time.

ONLY DAYTON MAKES THE COG-BELT!

See BELTING in the yellow pages of your telephone directory for the name of your local Dayton distributor or write Dayton Industrial Products Co., Melrose Park, Illinois

F. E. Tyler, Chairman Of Dewey Portland Cement Dies after Long Career

Frank Edmond Tyler, chairman of the board of directors of the Dewey Portland Cement Company, died on October 5 at his home in Kansas City, Mo. He was 90 years of age.

Mr. Tyler entered the cement business in 1904 as treasurer and general manager of the American Cement Company at Neodesha, Kans. Two years later he and his brother, H. F. Tyler, organized the Dewey Portland Cement Company. He served as president of the concern until 1941.

Dewey's first plant was erected at Dewey, Okla., in 1907. Twenty years later a second plant was built at Linwood, Iowa, and last summer ground was broken for a third facility near Tulsa, Okla.

The Frank Edmond Tyler Foundation, a charitable trust, was created by his company in 1953.

Standard Industries Expansion Ups Output to 1,000 T.P.H.

A $500,000 expansion and modernization program has been completed at the Tulsa, Okla., quarry and crushing plant of Standard Industries, Inc. New facilities and equipment have increased capacity to 1,000 t.p.h., and a scheduled output of more than a million tons of gravel per year.

Included in the expansion are eight 200-ton silos for storing eight sizes of gravel, ranging from less than ¼ to 1½ in. Seven other new silos, each with a capacity of 100 tons, were added for combinations of several sizes made into varying blends. These silos and the chute-loading facilities will soon eliminate stockpiles.

Lone Star Cement Expansion To Add 1,000,000-Bbl. Kiln

A $6,500,000 expansion of the Norfolk, Va., plant of the Lone Star Cement Corporation has been authorized by the firm's board of directors. The growth program includes the addition of a 1,000,000-bbl. kiln, increasing the productive capacity of the plant to 2,300,000 bbl. per year. Lone Star instituted the first successful production of portland cement in the Tidewater region in 1925, and has increased plant capacity to keep pace with the needs of the area.

Frank E. Tyler

The firm, which operates 15 plants in the United States and six in Cuba and South America, last year completed the largest expansion program in its history. During the period from 1955-1958, some $82 million was spent to raise domestic capacity from 23,200,000 bbl. to 37,100,000 bbl., and increase Lone Star's total potential in the Western Hemisphere to 49,100,000 bbl.

Canada's Cement Production Shows Slight Rising Trend

Canadian manufacturers of portland cement shipped or used 725,836 tons of cement in August, 1959, compared with 829,108 tons in the previous month. In 1958 the August shipments amounted to 721,140 tons. Actual production for August, 1959, was 705,583 tons, compared with 662,928 tons in August, 1958. (See table below.)

Calaveras Joins Flintkote As 11th Acquisition— Becomes New Division

Calaveras Cement Company, San Francisco, became a division of The Flintkote Company, East Rutherford, N. J., at the close of business on September 29. Stockholders of Flintkote met in Boston, and shareholders of Calaveras met in San Francisco to give the vote of approval to the acquisition—the eleventh made by Flintkote since diversification plans began in February, 1956, and its newest cement company acquisition. (See PIT AND QUARRY, September, 1959, p. 32).

W. W. Mein Sr., chairman of Calaveras, was elected to the Flintkote board of directors, increasing that group to 14. W. W. Mein Jr., president of Calaveras, and other officers of the new division, will continue in their present capacities.

Just previous to the stockholder approval, announcement was made that Calaveras shipments in 1959 to date continue to run ahead of last year.

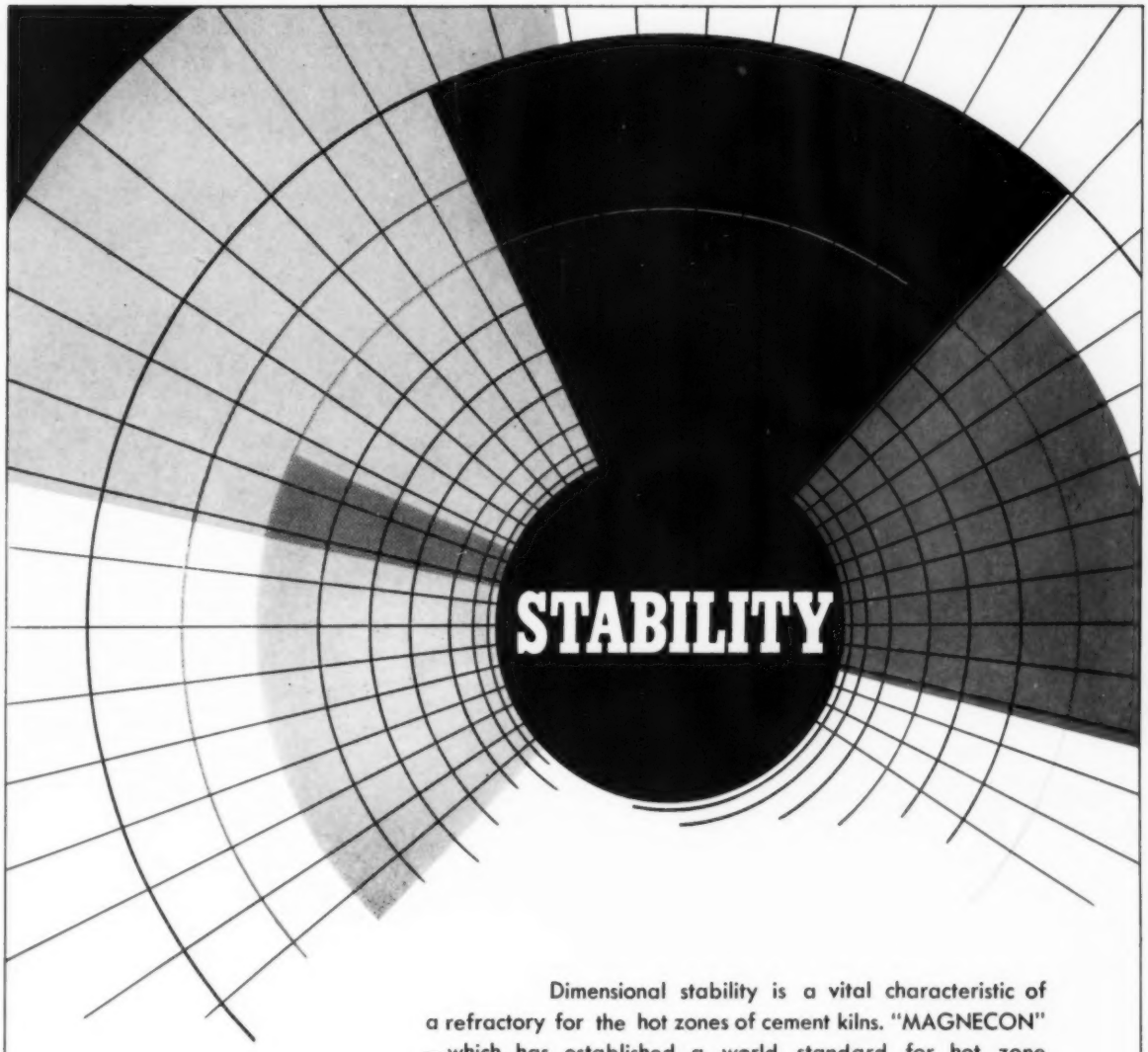
Combined N.A.L.I.-N.C.L.I. Now Legally Known as N.L.I.

Effective August 28, the name National Limestone Institute has been adopted by the organization formed by the merger of the National Agricultural Limestone Institute and the National Crushed Limestone Institute (See PIT AND QUARRY, August, 1959, p. 37). The corporate structure of the old N.A.L.I. will be utilized.

Consequently, the N.A.L.I. officers have become N.L.I. officers and will serve until after the annual meeting in January. Both boards had previously instructed N.A.L.I. and N.C.L.I. to continue operations until the annual meeting; but the new N.L.I. became legally effective on November 1.

Production, Shipments and Stocks of Portland Cement

	August		Year to Date	
	1958	1959	1958	1959
	(Short Tons)			
Stocks at plants and warehouses at beginning of period	602,926	606,786	453,041	609,217
Production	662,928	705,583	4,085,915	4,099,385
Shipments to customers and used at plants	721,140	725,836	3,995,380	4,123,027
Stocks at plants and warehouses at end of period	544,714	586,533	544,714	586,533
Exports, August	26,612	27,359	91,709	175,308
Imports, August	5,501	...	29,184	...
July	3,041	...	23,683	...
June	3,394	...	20,642	...



Dimensional stability is a vital characteristic of a refractory for the hot zones of cement kilns. "MAGNECON" —which has established a world standard for hot zone liners—has very high dimensional stability. "MAGNECON" was the refractory selected for seven of the largest cement kilns in the world, all newly completed or still a-building:

Miron Freres, Montreal, Que.
Kiln 550′ x 15′ diameter

Ciments d'Obourg, Obourg, Belgium
Kiln 525′ x 15′ 7″ diameter
Kiln 525′ x 14′ 7″ diameter

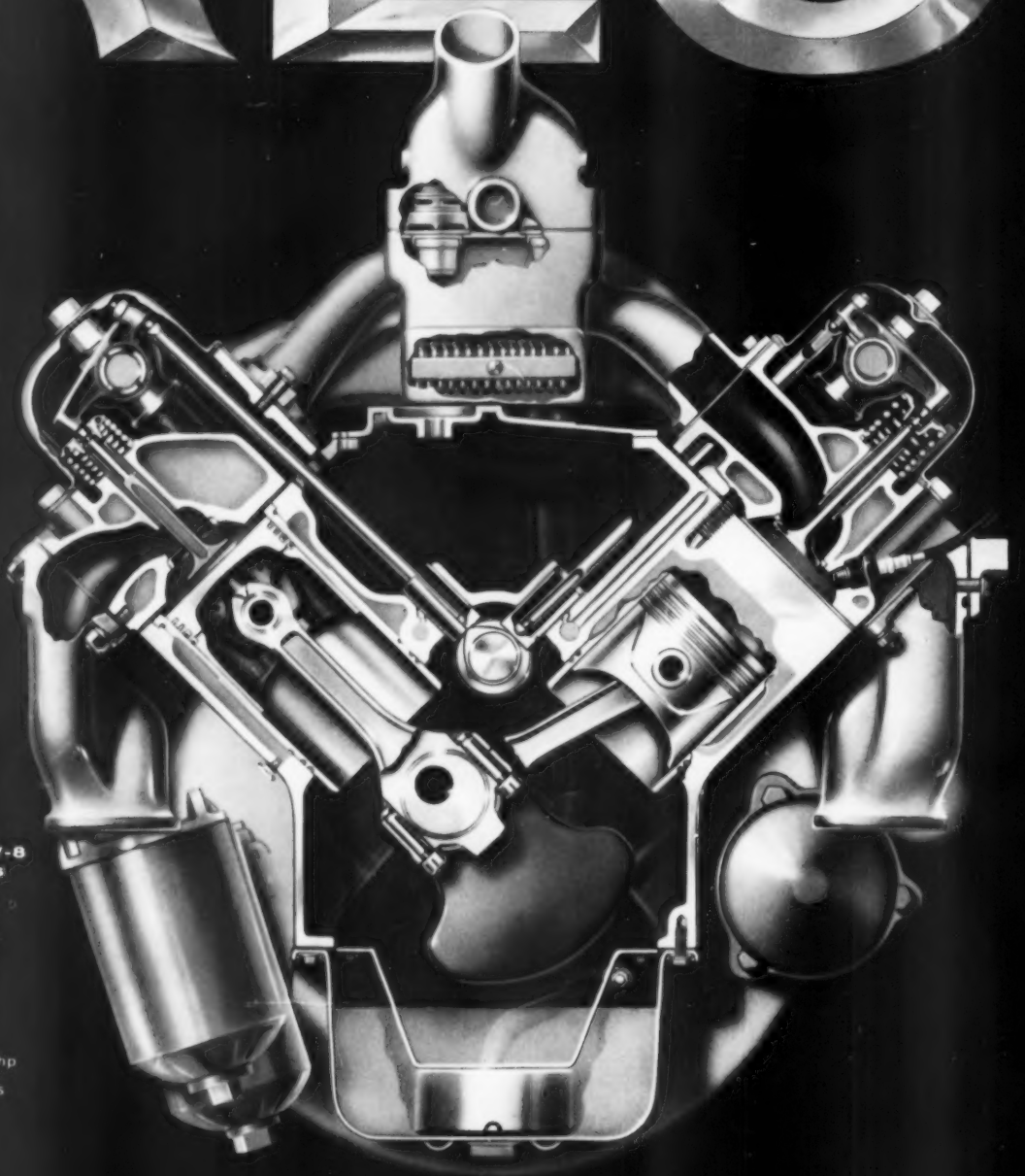
Dundee Cement Co., Dundee, Michigan
2 kilns 460′ x 16′ 6″—15′
—16′ 6″ diameter

Ciments Liegeois, Harcourt, Belgium
Kiln 475′ x 13′ diameter
Kiln 510′ x 14′ 5″ diameter

CANADIAN REFRACTORIES LIMITED
CANADA CEMENT BUILDING, MONTREAL, CANADA

1908

REO



Gold Comet V-8 —OV 235 Gas

Brake hp:
235 @ 3400 rpm

Torque:
412 @ 2400 rpm

Bore: 4-1/8"

Stroke: 4-1/8"

Displacement:
440 cu. in.

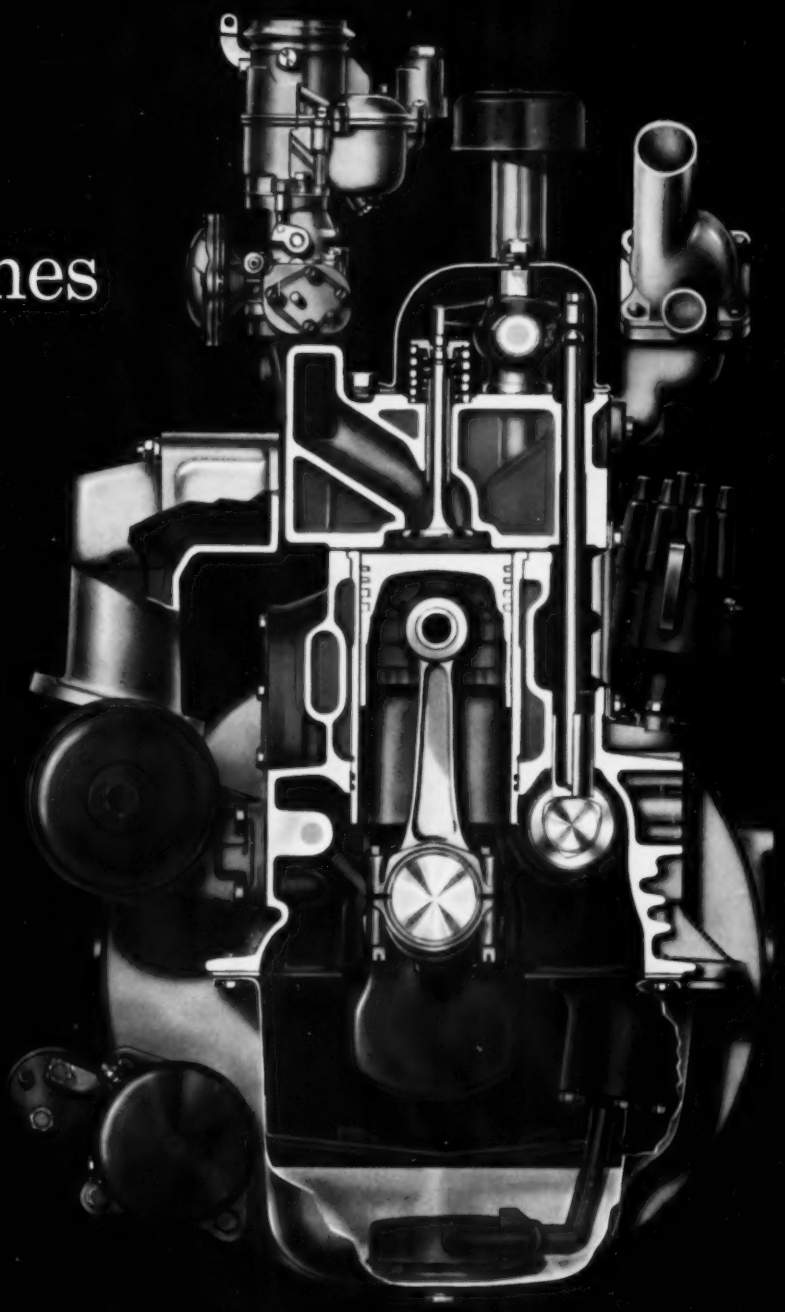
Other V-8's: 207 hp gasoline and 220 hp LP-Gas models also available.

GOLD COMET truck engines

Only Reo offers replaceable "wet-sleeve" cylinders in a complete line of gasoline and LP-Gas engines for heavy hauling. Here's the big reason Gold Comets are first choice for high road mileage, or operations where engine miles far exceed chassis miles.

Reo's easily replaceable "wet-sleeves" eliminate costly reboring. This money-saving feature assures like-new engine efficiency throughout the lifetime of your truck.

For livelier power and continued high efficiency, buy the engine without an age limit. Sixes and V-8's in gasoline or LP-Gas for every use . . . in a rugged Reo truck built for the job.

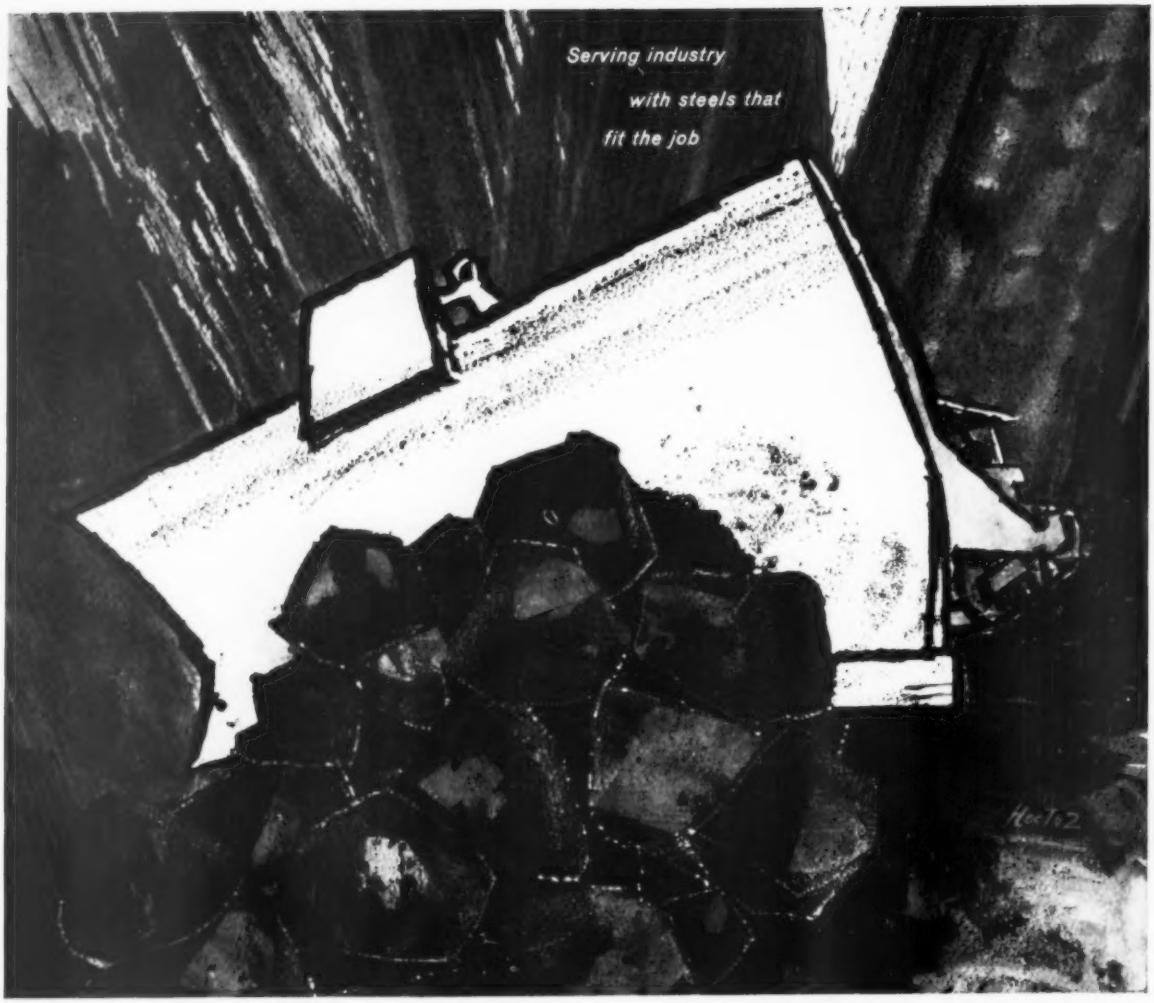


Gold Comet Six—OH 185 Gas

Brake hp: 185 @ 3400 rpm
Torque: 320 @ 1200 rpm
Bore: 4-1/4"
Stroke: 4-1/4"
Displacement: 362 cu. in.

Other Sixes: gasoline—170, 145, 130, and 110 hp
LP-Gas—160, 142 and 100 hp

REO DIVISION, The White Motor Company, Lansing, Mich.



GET TOUGH

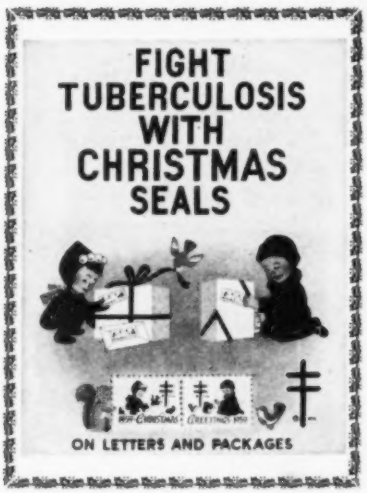
WITH LUKENS "T-1" STEEL
TRADEMARK

Where the going gets rough, versatile Lukens "T-1" steel fights back. For repair or modification of heavy duty equipment such as truck beds, chutes, bucket teeth and dozer blades, this special duty steel plate can be ordered from *warehouse stock* in a wide range of plate sizes and gages. Lukens "T-1" is the modern mining steel – you can work and weld it in the field as readily as in your shop. Its terrific resistance to abrasive impact – coupled with an extremely high yield strength – means fewer replacements and often greater payloads. That's why more and more equipment builders are using Lukens "T-1" to provide longer life in shovel buckets, trucks and other mining equipment. Remember to specify the extra-tough 321 min. BHN quality. For performance and application details, request our special booklet, "Lukens 'T-1' for Toughness." Address Manager, Application Engineering Dept., O119 Services Bldg., Lukens Steel Company, Coatesville, Pennsylvania.

These warehouses can supply you with Lukens "T-1" steel plate...

Alabama, BIRMINGHAM 2, O'Neal Steel, Inc., P.O. Box 2623 • **California,** LOS ANGELES 54, Earle M. Jorgensen Co., P.O. Box 2358, Terminal Annex. 10650 S. Alameda St. • LOS ANGELES 33, The R. J. M. Company, 238-248 South Mission Rd. • **Illinois,** CHICAGO 8, Joseph T. Ryerson & Son, Inc., 16th and Rockwell Sts. • **Kentucky,** ASHLAND, Mansbach Steel Co., 19th St. and River Front • **Maryland,** BALTIMORE 2, Wm. G. Wetherall, Inc. 317 President St. • **New Mexico,** ALBUQUERQUE, Miller and Smith Mfg. Co., Inc., 500 Phoenix Ave., N. W. • **Ohio,** CLEVELAND 6, Mills-Wolf Steel Co., 12434 Cedar Rd. • **Oregon,** PORTLAND 4, J. E. Haseltine & Co., 115 S. W. Second Ave. • **Pennsylvania,** McKEES ROCKS, Follansbee Steel Co., 200 Bradley St. • **Quebec,** MONTREAL, Drummond, McCall & Co., Ltd. 930 Wellington St. • **Utah,** SALT LAKE CITY, Structural Steel & Forge Co., P. O. Box 300 • **Washington,** SEATTLE 4, Stack Steel & Supply Co., 500 Landers St. • SPOKANE 10, Union Iron Works, East 217 Montgomery Ave., P. O. Box 2135.

LUKENS ®



The annual Christmas seal campaign supports the work of national and local tuberculosis associations. Of the money raised each year in local communities, 94 percent remains with the state; the other 6 percent is allocated to the national organization. Christmas Seal funds are spent primarily for health education, case finding, rehabilitation, and research. Do you have your seals?

Harry T. Campbell Sons Acquires J. S. Teeter Facilities

Facilities of John S. Teeter and Sons, Inc., have been acquired by Harry T. Campbell Sons' Corporation, Towson, Md., through the newly formed Campbell subsidiary, Teeter Stone, Inc. John D. Teeter is president of the new subsidiary.

Included in the acquisition are equipment and quarrying facilities at a trap rock quarry near Gettysburg, Pa., and a limestone operation in Carroll County, Md.

Aggregate Services of Jeffersonville, Incorporated, Louisville, Ky., a company affiliated with the R. B. Tyler Company, general road contractors of Louisville, recently opened a sand and gravel plant near Utica, Ind.

Fonce F. McCallin, 64, sales and service manager at Denver for Monolith Portland Midwest Company, died on September 30. Mr. McCallin had been associated with Monolith since 1930 and was widely known in the highway construction industries in Colorado and Wyoming.

Need Christmas Gift Advice? B.G.A.C. Offers Suggestions

The Business Goodwill Advisory Council, a group recently formed by sales managers interested in clearing the air relative to the subject of business gift giving, has issued several suggestions which may be of interest to plant operators in the nonmetallic minerals industries.

Seven basic "Keys to Success" in the selection and distribution of business gifts have been outlined by B.G.A.C. in its folder *Business Gifts at Christmas—Good or Bad?* The rules are as follows:

1. Keep your gifts to a modest value in relation to the importance of each recipient as an employee, prospect or customer. Extravagant gifts smack of bribery.
2. Choose your gifts individually, considering the tastes of each group of recipients, or preferably, of each individual recipient.
3. Choose only high-quality gifts that are useful, durable, and dependable.
4. Personalize each gift, if possible, with the recipient's name or initials.
5. Package each gift attractively and securely.
6. Include a personal note with each package; or use a greeting card or a special gift label.
7. Deliver each gift with a flair, if possible—personally or by special messenger—and preferably to each recipient's home rather than to his office.

B.G.A.C. makes a strong point of the fact that "as a result of occasional abuses . . . some businessmen have made the mistake of forbidding their employees to accept business remembrances before realizing that such a public statement bares basic mistrust of the employees and inevitably results in very poor employee and public relations."

On the other side, B.G.A.C. points out, detailed surveys have shown that "business giving is generally on the upswing; that the practice is definitely worth while, but it *does* depend on how it is done."

ANALYZE FOR Na_2O or K_2O
WITH ACCURACY IN ONE MINUTE

In analyses for alkalies, such as sodium and potassium oxides under ASTM Spec. C114-51T, the Perkin-Elmer Model 146 Flame Photometer delivers reliable results. Internal standard or direct-intensity reading from AC drift-free electronics gives fast routine analyses, accurate to within one percent.

The Model 146 operates with any commercially-available gas and air, is designed for simplified, convenient operation. It uses regular electric utilities, and includes rugged self-contained meter and phototube circuits.

Write for Perkin-Elmer's illustrated brochure on the Model 146 Flame Photometer. Enter 37 on card, page 167

INSTRUMENT DIVISION
Perkin-Elmer Corporation
NORWALK, CONNECTICUT

Pellets formed in revolving pan are fed to traveling grate for drying and pre-calcining.

Pellets to profits

"COORDINEERED" Allis-Chalmers Equipment Paves Way to Increased Capacity at Diamond Portland Cement Co.

Progressive — that's Diamond Cement at Middle Branch, Ohio. Modernization — $5,000,000 worth — has meant an additional million barrels of *low-cost* production for this relatively small, but aggressively on-the-grow operation.

Significantly, Allis-Chalmers supplied much of the major equipment in this modernized plant. Wheel horse in the operation is a complete *ACL* kiln system — pelletizer to clinker cooler. Other Allis-Chalmers equipment includes two vibrating screens and a pair of 1000-hp ball mills. Associated electrical equipment was also supplied by Allis-Chalmers.

"Heads-Together" Approach to Application

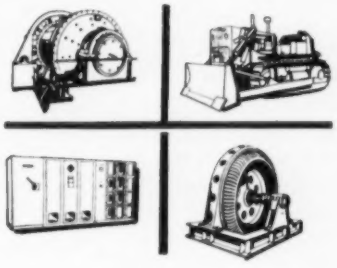
Allis-Chalmers manufactures a most diversified line of processing and electrical equipment. Each product department is staffed with research, design, manufacturing and application specialists. "Coordineering" results from an interdepartment exchange of ideas and the correlation of specific skills. Integration of thinking, planning and engineering precedes integration of equipment.

Help for You or Your Consultants

Arrange a meeting with your A-C cement team. See your local representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.

Allis-Chalmers Products for Cement Industry

Earth-Moving Equipment
Kilns Grinding Mills Crushers
Vibrating Screens
Dryer-Coolers Motors Control
Switchgear
Unit Substation Steam Turbines



ALLIS-CHALMERS A-C A-5928-CM

ACL is an Allis-Chalmers trademark.

—*Courtesy of National Lime Association, Safety Topics*

• The accompanying cut shows a novel truck safety alarm devised by a large Midwestern contractor. The device incorporates an old Chevy brake drum welded to the wheel, three interconnected 1-in. pipes set in the drum, and a free-falling steel ball bearing. The alarm is effective at speeds less than 20 m.p.h., with the steel ball clanging as it moves from pipe to pipe. At higher speeds, centrifugal force causes the ball to remain motionless, and soundless. The device has been applied to graders, scrapers, tractors, etc., and should be particularly effective on quarry trucks and stockpiling trucks, especially in backing. Cost is reported at only a few dollars per unit.

Fluorine Recovery Methods Promote Anti-Air Pollution

New equipment at the Coronet Division (Smith-Douglass Company) phosphate processing plant at Plant City, Fla., now removes between 97-99 percent of impurities, most of it fluorine, formerly released in gases into the atmosphere.

The addition of new scrubbing units ups the total (to about $750,000) spent by Smith-Douglass in recent years for research and equipment to recover fluorine from Florida phosphate rock and make it into a salable product. The recovered fluorine is chemically processed and converted into products suited for industrial marketing.

The new recovery system involves washing the exhaust gas stream four times with high-pressure water sprays. The gas stream is then completely neutralized with limestone.

Huron's Plant at Alpena Gets Perpetual Cleaning

Housekeeping routine at Huron Portland Cement Company's Alpena plant has been stepped up with the addition of special equipment. Two Dumpsters—truck versions of trash collectors—police the plant area, picking up waste metal, paper, and other discarded material from 30 large trash bins located at various points. In addition, a mechanical road sweeper keeps the plant driveways neat.

Most expensive item in the tidying-up equipment is a vacuum-cleaning system which pulls dust into a central collector by means of a huge suction pump. This collector reportedly cost $125,000.

G. H. Tsuruoka Appointed P.C.A. Housing Bureau Mgr.

George H. Tsuruoka has been appointed manager of the Housing and Cement Products Bureau of the Portland Cement Association, effective October 1. He succeeds S. H. Westby, who was named technical advisor in the bureau.

Mr. Tsuruoka was formerly associated with Street and Smith Publications, having served as architecture and design editor for *Living for Young Homemakers* and building co-ordinator of all company publications.

In his new capacity as technical advisor, Mr. Westby will co-operate with other segments of the home-building industry in developing new techniques and applications of concrete in home construction. He will also be a consultant on the technical aspects of concrete in this field. He has been affiliated with P.C.A. since 1943.

Commercial sand is now being recovered from a 135-acre tract southeast of Salina, Kans., by a new firm, Central Kansas Sand, Incorporated. Audley Walker is manager, and Carmen Walker is assistant manager. About 1,100 tons per day can be dug from the new pit.

American-Marietta, Dewey Abandon Merger Proposal In Separate Actions

Executives of both American-Marietta Company and Dewey Portland Cement Company have announced that a merger proposal has been abandoned. Dewey shareholders were to have voted on the merger.

Boards of directors of both firms in separate meetings then voted to drop the consolidation plans. No further comment on the issue was made by spokesmen for either firm.

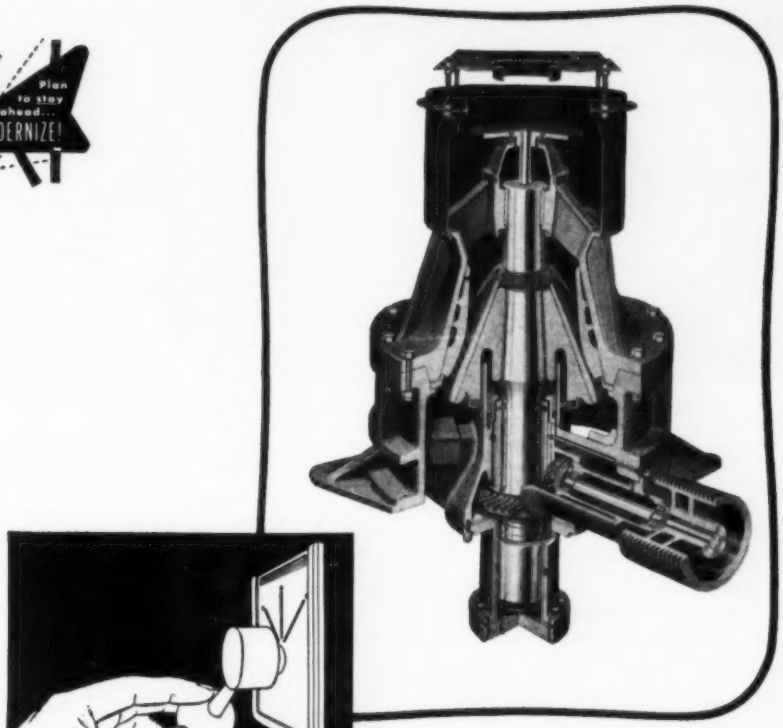
$1,000,000 Expansion Program Set by Saskatchewan Cement

A $1,000,000 expansion program is under way at the Regina, Sask., plant of the Saskatchewan Cement Company. A new grinding mill (the third to be erected) and an electrostatic dust collector are the two major elements of the program. Precipitation Company of Canada, Ltd., will install the collector.

The balance of the expenditure will be used for electrical equipment and other general plant improvements. This plant was built at a cost of almost $8 million and began operations in 1956.

The American Welding Society recently announced the publication of the first manual of soldering ever published. The 176-page book, which contains 81 illustrations and 34 tables, covers all phases of soldering, combining the theoretical with the practical. Copies may be obtained from the American Welding Society, Department T, 33 West 39th Street, New York 18, N. Y. Price, $5.

A new plant is under construction by the Montecatini Chemical Group at Compolranco, Sicily, for the production of 50,000 tons of potassium a year. The potassium will be processed from large deposits of kainite recently discovered in the mountainous interior. The deposits have a 12 percent content of potassium K_2O. This plant will meet Italian potassium salt needs, and also permit the country to become an exporter of this mineral.



Just a minute...

that's all it takes one man to change settings in a *Hydrocone* crusher

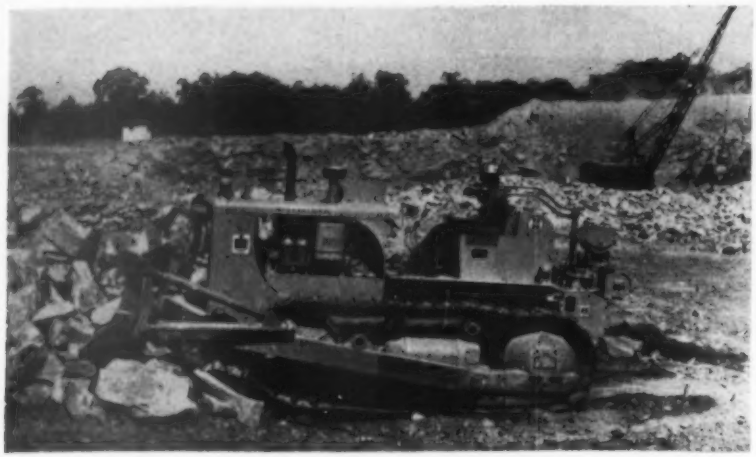
Flip a switch . . . adjustment to precise product size is that easy. Compensation for wear and emergency unloading are also one-man, one-minute operations. Only Allis-Chalmers gyratory crushers offer this remarkable speed and convenience.

Bulletin 07B7145C tells the complete *Hydrocone* story. Get a copy from your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.

Hydrocone is an Allis-Chalmers trademark.

A-5929-CM

ALLIS-CHALMERS



• At the Crabtree Creek Quarry of Superior Stone Company, division of American-Marietta Company, near Raleigh, N. C., an International TD-20 crawler stockpiles granite chunks. This crushing plant turns out 200t.p.h. of crushed stone products every hour, for use as rip-rap, concrete aggregate, asphalt aggregate, and base material. The crawler also strips a 5- to 6-ft. earth overburden to uncover a 120-ft. stone face in the pit operation.

Officers and Board Elected For 1959-60 Producers' Council

National officers and directors were recently elected for The Producer's Council for 1959-1960.

Among officers re-elected for a second one-year term is President H. Dorn Stewart (Barrett Division, Allied Chemical Corporation). Among directors re-elected for a two-year term are: Daniel J. Boone (Zonolite Company), and Marvin Greenwood (The Celotex Corporation). New to the board this year is George Martens (Johns-Manville Sales Corporation).

Mississippi Valley Portland To Double Cement Capacity

Initial planning for more than a double increase in annual capacity at the Mississippi Valley Portland Cement Company's Redwood, Miss., plant has been approved by the firm's executive committee. Consulting engineers will be hired to prepare preliminary designs.

The 680,000-bbl., $5,000,000 wet-process plant went into operation early this year. (See plant story, PIT AND QUARRY, July 1959.

1959 Revised Edition Of Electrical Code Available

The new *1959 National Electrical Code* is now in print and available from its sponsor, the National Fire Protection Association. The 1959 Code is a complete revision of the previous edition, and is now published in a 528-page pocket-size book. It incorporates a substantial number of important new electrical safety provisions adopted at the recent N.F.P.A. annual meeting.

Copies of the Code (NFPA No. 70) may be ordered from the National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.

Barite, Barium Production Continues Declining Trend

Domestic production and consumption of barite in 1958 declined for the second year, according to the U. S. Bureau of Mines.

Production of primary barite totaled 486,287 tons, a 63 percent decline from 1957, and was at its lowest level in 15 years. Consumption of crude barite declined 28 percent.

Philippine producers of nonmetallic minerals registered a substantial increase in value of production during 1958 — 113 manufacturers showed a production value of more than $42 million, up $12,500,000 from 1957. Biggest increase was registered in cement production — valued at $24,700,000 in 1958, up from $15,400,000 in 1957.

Salesmanship—Good Relations Combined by National Gypsum

A clever salesmanship technique used by National Gypsum Company of Buffalo to dramatize attention paid to shipments has been reported by *American Salesman*.

A Polaroid snapshot of the shipment as it was about to leave the plant is sent to the customer with this message: "Your order was delayed only 60 seconds." The 60-second delay is the time required to take the snapshot.

The technique is used to assure the customer that the goods were in excellent condition when shipped; and a reply card is included, so that the receiver can tell the company the general condition of the goods when received.

Crude Gypsum Output in 1958 Follows Construction Climb

Reports made by gypsum producers to the U. S. Bureau of Mines indicate that the domestic industry reached a near-record high in output of crude gypsum during 1958. Some manufactured products also approached previous records.

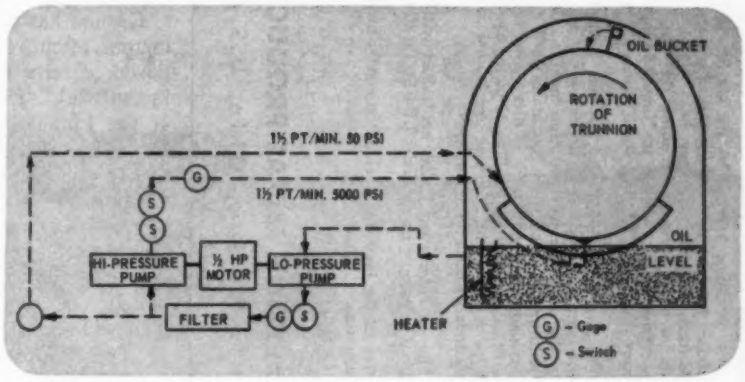
Crude gypsum mined domestically totalled 9,600,000 short tons—a gain of 4 percent over 1957. Of the 21 states in which mining was conducted, 13 reported increases during the year. Four states accounted for 54 percent of the national total tonnage mined—California, Michigan, Texas, and Iowa.

At 8,100,000 short tons, calcined gypsum also showed a gain of 4 percent over the preceding year. It was produced from both domestic and imported ores.

Consumption of most gypsum products closely followed the trend of residential construction during 1958.

Imports of crude gypsum dropped to 4,000,000 tons in 1958, or 7 percent less than the year before. Of that amount, Canada supplied 2,900,000 tons.

The new Vicksburg, Miss., shipping plant of Marquette Cement Manufacturing Company, is nearing completion. Delivery of cement by truck to customers in the Vicksburg area began recently. Barge loading facilities will be added.



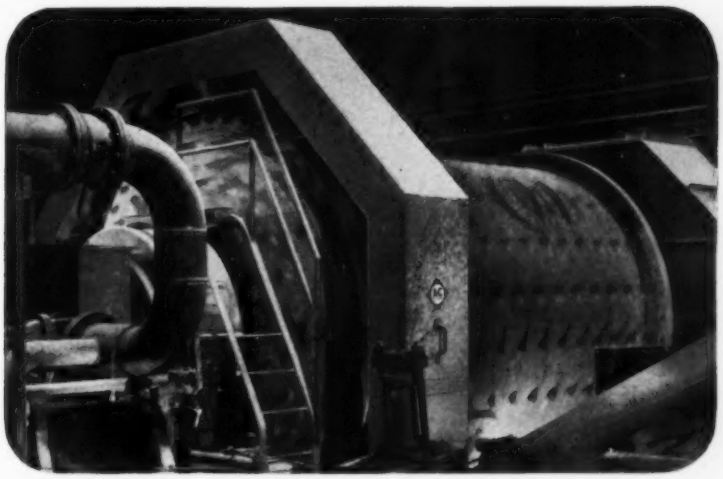
Floating start, ride and stop for big mills

New Lubritrol system provides constant lubrication for trunnion bearings

The new, bigger Allis-Chalmers mills now grinding out profits in progressive rock products plants actually *float on oil.* No bearing-wearing starts. Horsepower waste is kept at minimum. No dry sliding after shutdown. All functions of the *Lubritrol* system are automatic . . . controlled by foolproof pressure gages and switches. Filter removes contaminants.

When you modernize your rock products operation with a bigger mill, insist on Allis-Chalmers — the only mill that gives you the positive protection . . . the operating and maintenance economy of *Lubritrol* constant lubrication.

For complete information, see your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.



Plan to stay ahead... MODERNIZE!

Lubritrol is an Allis-Chalmers trademark.

ALLIS-CHALMERS A-C

A-5934-CM

NEWS ABOUT THE DUMP BODY BUSINESS

Performance Bonus!

Six Marions Provide Big Daily Payloads On Double-Duty Fill Dirt-Coal Hauling Jobs

Since May, 1958, six Marion 13 cubic yard bodies have been performing double-duty for Frank Murphy Trucking of Zanesville, Ohio. On days when the weather prevented hauling dirt for building an overpass on highway 16 in Newark, Ohio, the units were kept busy hauling coal.

The owner, Frank Murphy, has been well pleased with the continuous operating dependability and efficiency of the units during these nine months. On the road building job, each truck has maintained a high daily payload rate of 450 yards of dirt during each 10-hour shift. Each unit makes 40 to 50 of the 1½-mile round trips a day. The Marions are loaded in 30 to 40 seconds with a grader-conveyor.

The 13 cubic yard bodies are raised with a Marion front telescopic hoist Model LF-614-T-120.

Get all the facts on Marion bodies and hoists for construction . . . quarrying . . . mining . . . all your hauling requirements.

MARION METAL PRODUCTS CO.
Marion, Ohio, U.S.A.

MARION BODIES AND HOISTS

Enter 44 on card, page 167

Big Lime Kiln to Be Built By Dow at Ludington, Mich. Will Add 600 Tons per Day

Ground has been broken at Ludington, Mich., for a lime kiln believed to have the largest capacity in the world. The kiln will be built at the Ludington Division of The Dow Chemical Company adjacent to two other kilns.

Louis N. Carmouche, manager of Dow's Ludington Division, stated that the 160- by 11½-ft. kiln will be designed to produce approximately 600 tons of lime per day. This will almost double the capacity of Dow's present lime-producing facilities at Ludington.

It will be the first of the new Allis-Chalmers-Lepol type grate kilns devoted to lime production in the United States, although several of this type have been built for cement production. Preheating of the limestone at the grate facilities will permit the boost in capacity.

The new kiln unit will calcine limestone from northern Michigan to chemical grade lime for use in other plant processes at Dow's Ludington Division.

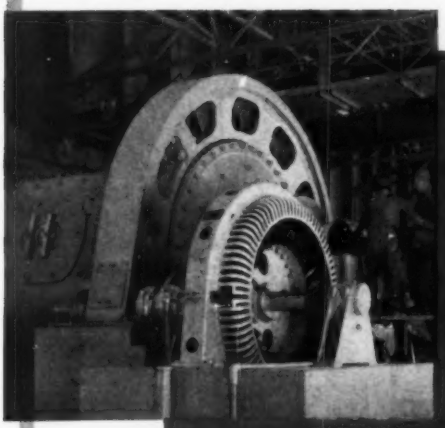
Gas Firm's Free Cement Offered to Spur Area Industry

Last summer Arkansas Louisiana Gas Company made an offer of free cement to non-profit industrial organizations which promote the building of facilities for new industries in Arkansas and parts of Texas and Louisiana. The free cement—limited to 1,000 bbl. apiece—is Foreman brand, manufactured by Arkansas Cement Corporation, Foreman, Ark., a wholly owned subsidiary of the gas company.

Qualified municipal agencies such as cities, local industrial development commissions, and industrial committees of the Chamber of Commerce may apply for the cement if the facilities to be constructed are entirely new and intended for a new industry in the given locality. At least a dozen grants have been approved, aggregating more than 7,300 bbl.

Although the recipient of the cement pays nothing for it, the transportation charge must be paid, and funds must be raised for land acquisition and construction.

New insulation adds years to motor life



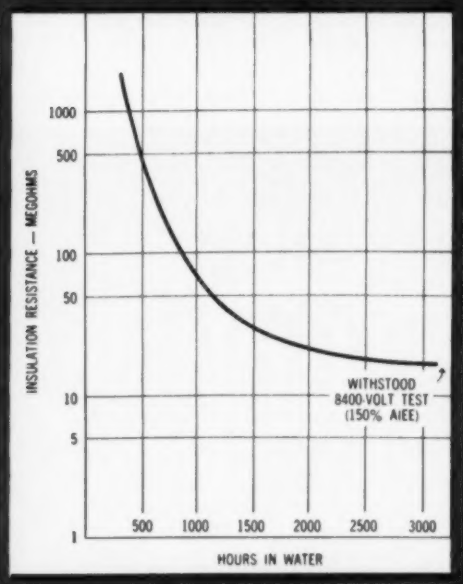


Chart shows insulation resistance in water of a 2300-volt *Silco-Flex* insulated coil, completely immersed with 2300 volts applied continuously.

Silco-Flex Insulation | *Polyester Mica Tape* | *Asphaltum Mica Tape*

Sandblasting proves the difference! Only *Silco-Flex* insulation stood up after one minute using 90-grit aluminum oxide and 100-psi air from distance of 6 inches.

Super-Seal motors withstand abrasion, physical stresses, moisture, heat aging

A drip-proof enclosure is usually all you need with the remarkable new insulating systems and advanced mechanical features of *Super-Seal* motors.

New motors are protected with the *Silco-Flex* stator coil insulating system: A homogeneous dielectric barrier of vulcanized silicone rubber possessing unmatched resistance to abrasives, moisture and most corrosive or chemical atmospheres.

Synchronous machines have *integrated* field coils that seal against contaminants . . . bond and lock against mechanical forces.

Contact your nearby A-C office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

Super-Seal and Silco-Flex are Allis-Chalmers trademarks.

A-5922-CM

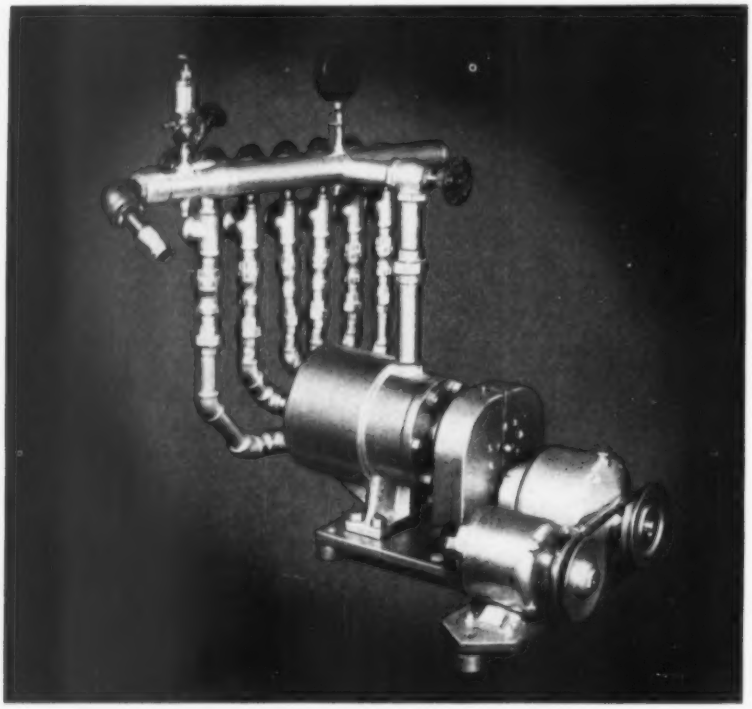
ALLIS-CHALMERS

6-Month Totals Released For Canadian Nonmetals

The Dominion Bureau of Statistics, Ottawa, Canada, has released the totals on production of Canada's leading nonmetals for June, 1959. The accompanying table shows the figures for that month, as well as for May, 1959, and June, 1958.

Totals for the 1958 and 1959 January-June period are also shown (last two columns).

	June 1958	May 1959	June 1959	Year to Date 1958	Year to Date 1959
Asbestos .....tons	73,995	91,257	98,012	394,932	472,097
Cement .....tons	719,926	651,778	781,363	2,521,477	2,568,083
Clay products.....$	4,140,795	4,210,656	4,711,854	17,687,167	19,511,660
Coal .....tons	684,469	570,311	609,602	5,767,079	4,851,645
Gypsum .....tons	319,801	558,882	691,362	1,618,093	2,462,362
Lime .....tons	126,576	144,265	142,583	782,651	820,301
Salt .....tons	183,473	225,516	217,561	955,319	1,474,508



MANITOWOC CENTRAL CONTROL VALVE FOR SLURRY AGITATORS

The Manitowoc Central Control Valve is a self-contained, fast acting unit complete with air manifold and valve drive. Shown above is a motor-driven central control valve regulating air supply to six slurry agitators. It can be timed with great precision to suit any desired operating cycle and any electrical current characteristic. The entire unit is mounted on a common bed plate with driving mechanism fully enclosed and automatically lubricated.

The Manitowoc Slurry Agitator is designed to use air on an intermittent cycle—as supplied by the Central Control Valve—as economically as possible, and at the same time employs a unique method of piping that prevents the air line from plugging.

Get complete information on the Manitowoc Central Control Valve, Slurry Agitators and Recuperators for rotary kilns—write today!

MANITOWOC SHIPBUILDING, INC.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

Enter 46 on card, page 167

Construction Put in Place Drops 4% in September—Still Up From Last Year

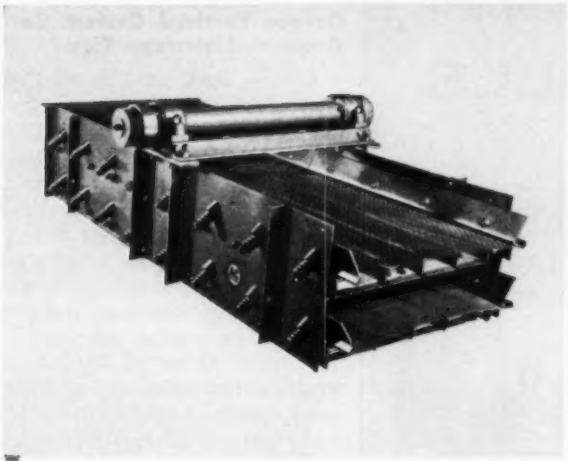
The value of new construction put in place in September dropped for the first time in eight months, due to the steel strike, to a value of $5,100,000,000, according to preliminary estimates of the U. S. Department of Commerce. But the total for September, 1959, was still 7 percent over that for September, 1958.

It was a decrease of 4 percent from August, while September normally shows little or no change from August. All types of construction, with three minor exceptions, shared in this decline. The aggregate value of work put in place in the first 9 months of 1959 was $41,000,000,000—15 percent ahead of the same period in 1958.

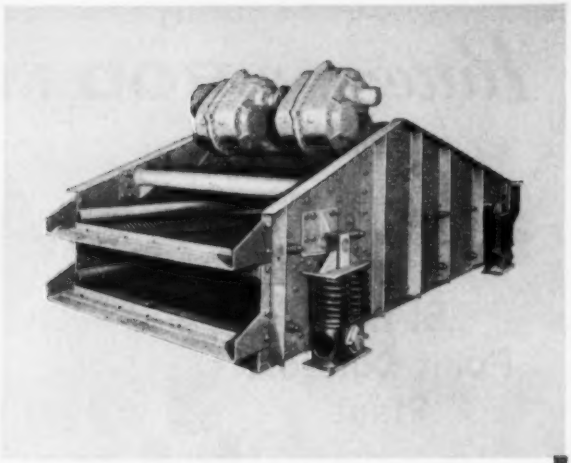
The physical volume of new construction put in place in the first 8 months of 1959 is estimated to be $25,500,000,000—14 percent above the volume for the corresponding 1958 period, as measured in 1947-49 prices.

New private construction outlays in September were $3,500,000,000—down 3 percent from August. Normally September volume is at about the same level as that of August. In the first 9 months of 1959 the total was $28,500,000,000—16 percent above the same period in 1958. New residential construction was down 2 percent in September, which is a slightly more than seasonal decrease. The September, 1959, expenditures for new residential construction were 20 percent above those of September, 1958, and expenditures for the first 9 months of 1959 were 30 percent more than in the comparable period in 1958. For nearly all types of private construction, the total for the first 9 months of 1959 is above the comparable period in 1958. Expenditures for private industrial buildings provide the major exception. This was down 23 percent.

Expenditures for new public construction in September were $1,560,000,000—5 percent less than in August and 2 percent below September, 1958. The 1959 9-month total was $12,500,000,000—13 percent above that of the same period in 1958.



For moderate to fine sizing — wet or dry. AVS *Aero-Vibe* inclined screen: Available with wire cloth or perforated plate surfaces. Maximum aperture — 1½ inches. 1, 2 or 3 decks. Sizes 3 by 6 to 5 by 10 feet.



For coarse to fine sizing — wet or dry, rinsing, or media recovery. *Low-Head* horizontal screen: Saves headroom. Wire cloth or perforated plate. Apertures to 2½ inches. 1, 2 or 3 decks. Sizes 3 by 6 to 8 by 20 feet.

FROM ALLIS-CHALMERS COMPLETE LINE

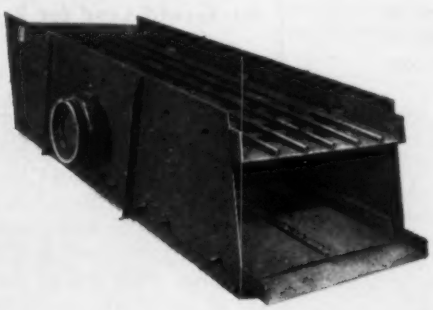
The right screen for your aggregate plant

FOR SCALPING, SIZING, RINSING, WASHING AND HEAVY MEDIA RECOVERY, ALLIS-CHALMERS PROVIDES THE SCREEN YOU NEED

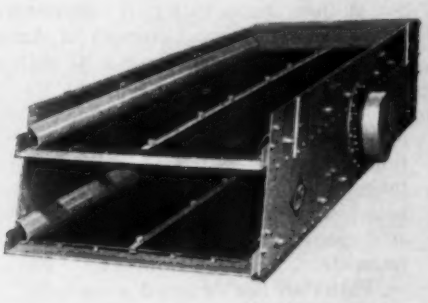
Large or small capacity — wet or dry crushed stone, sand or gravel — whatever your application there's an A-C screen for the job. Building the industry's most complete line of horizontal and inclined screens, Allis-Chalmers gives unbiased recommendations — suggesting to you the screen that will do your job at the lowest possible cost consistent with quality construction.

Built for a beating: There's no skimping on quality at A-C. For example, the frames of Allis-Chalmers screens are carefully machined and *stress relieved* for years of tough usage. Extra-large bearings give added life.

Easy to choose: A helpful screen selection guide has been prepared to help you pick the right model screen for your process. *Contact your Allis-Chalmers representative or write for Bulletin 25B6280. Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.*



For scalping and coarse sizing — wet or dry. XH *Ripl-Flo* inclined screen: Wire cloth, perforated plate, rod or stepped grizzly-bar surfaces. Apertures to 10 inches. 1, 2 or 3 decks. Sizes 4 by 8 to 8 by 14 feet.



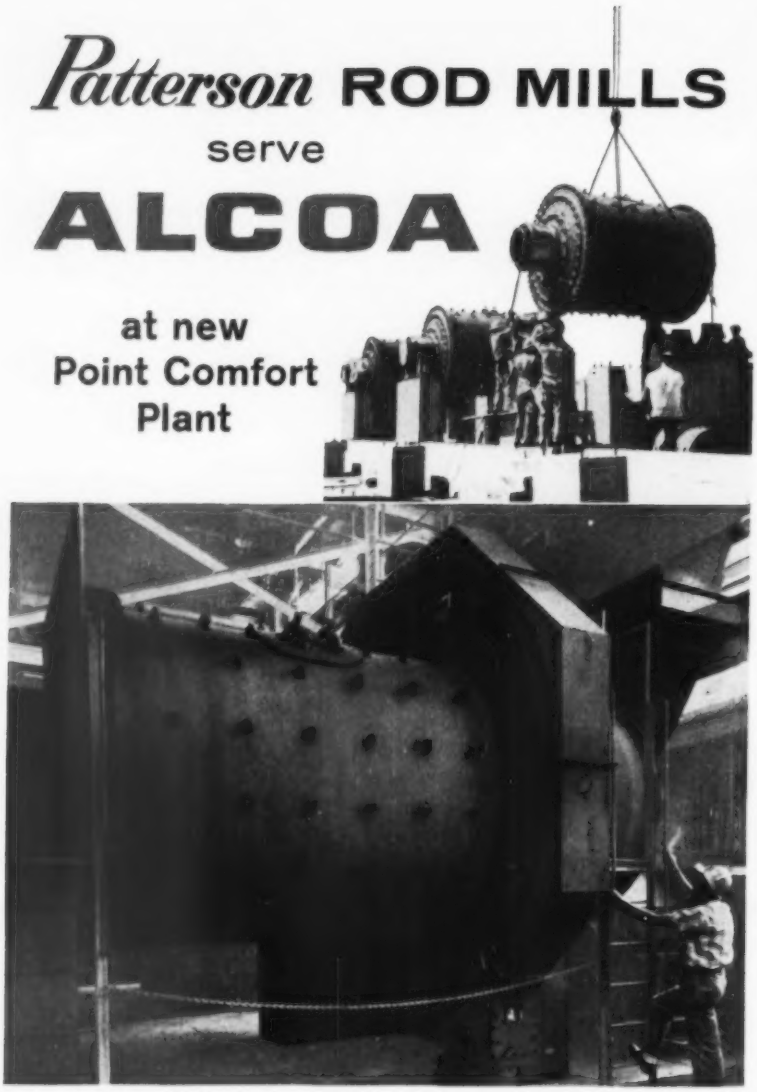
For light scalping, coarse to fine sizing — wet or dry, and for rinsing. SH *Ripl-Flo* inclined screen: Wire cloth or perforated plate. Apertures to 5 inches. 1, 2 or 3 decks. Sizes 3 by 6 to 8 by 20 feet.

Aero-Vibe, Low-Head and Ripl-Flo are Allis-Chalmers trademarks.

ALLIS-CHALMERS A-C

A-1200-CM

Patterson ROD MILLS serve ALCOA at new Point Comfort Plant



Six of these large Patterson Continuous Rod Mills are in service at Aluminum Company of America's new plant at Point Comfort, Texas. The 8′ x 10′ mills reduce bauxite from 6″ lumps to minus 10 mesh.

Mill shells are of one piece construction, furnished with heavy forged steel welding neck flanges for bolting shell section to the heads. Mill heads are of cast steel with integral cast main trunnion bearings. Replaceable linings of rolled steel have heat treated alloy lifter bars. Helical gearing is used with split gear construction for reversing gear and pinion for maximum life.

Patterson has designed a complete range of Ball, Tube and Rod Mills for continuous processing of a wide variety of materials ranging from alumina to zirconium. Our engineers will recommend a most economical process available for your needs, whether for a single mill or a complete plant. Write!

THE *Patterson* FOUNDRY AND MACHINE COMPANY

A Division of Ferro Corporation

East Liverpool, Ohio

Enter 48 on card, page 167

Oregon Portland Cement Co. Acquires Limestone Firm

Oregon Portland Cement Company, Portland, Oreg., recently acquired the National Industrial Products Company operation at Durkee, Oreg. Oregon Portland Cement, presently producing only cement from plants at Lime and Oswego, will diversify its production through the acquisition, supplying a complete line of chemical lime-rock products for several industries.

National Industrial Products, a wholly-owned subsidiary of Morrison-Knudsen Company, Boise, Idaho, explored the high-grade limestone deposit near Durkee early in 1954 and began producing a variety of sizes and grades of limestone a few months later.

1st Shipment of Materialite Delivered to Michigan User

The first boatload of Materialite aggregate was shipped recently from Chicago to Spring Lake, Mich. This shipment originated at the Material Service plant at Ottawa, Ill., where it is produced in a new multimillion-dollar processing plant from extensive shale deposits. It was towed to Chicago on six barges for loading onto the *Marquis Roen* for the lake crossing.

Destination was the Spring Lake Ice & Coal Company, Spring Lake, Mich., near Muskegon. The 9,000-cu. yd. shipment of aggregate will serve construction needs in western Michigan.

Third-Quarter Sales, Income At Record Lead for Penn-Dixie

Sales and net income of Penn-Dixie Cement Corporation for the three months ended September 30, 1959, were the highest for any third quarter in the company's history. On sales of $19,017,631 for the third quarter of 1959, net profit was $3,968,264, or $1.42 per share, as compared to sales of $16,400,598 and net profit of $3,400,800, or $1.22 per share, for the third quarter of 1958.

On sales of $40,392,490 for the nine-month period ending September 30, 1959, net profit was $7,652,997, or $2.74 per share, as compared to sales of $36,032,079 and net profit of $6,311,019, or $2.26 per share for the like period in 1958.

Enter 49 on card, page 167 →

1 Mobile Tournatractor cleans-up around 7 widely-separated shovels . . .

2 Cleans-up pit-floor after blasting . . .

3 Levels and compacts stockpiles . . .

How this large limestone quarry saves on tractor clean-up costs

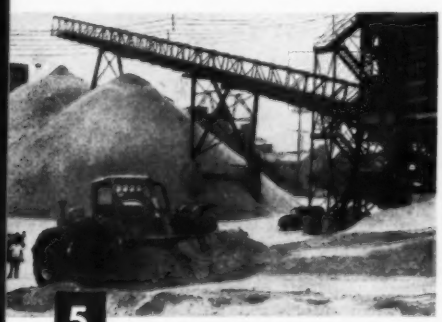
4 Handles clean-up at waste dumps . . .

At Texas, Maryland, the Harry T. Campbell Sons' Corporation operates one of the largest limestone quarries in the eastern states. With a half-dozen shovels, and numerous stockpiles over a considerable area, the firm once kept 2 crawler tractors busy on maintenance and clean-up work. But like all track-type tractors, the rigs spent about as much time just going from job-to-job as they did working.

"We bought Tournatractors to do the work of a crawler tractor whose main job was to clean-up the quarry floors," says Superintendent Eddie Reichert. "It really moves around our pit and does a grand job."

Owners of the Harry T. Campbell Corp. agree. "It's Tournatractor's speed that does the trick," says Mr. Campbell . . . "Tournatractor completes the clean-up job so fast, that it is available to do many other jobs throughout the quarry operation. In addition this rubber-tired tractor requires less maintenance than any track-type tractor."

Illustrated and described here are some of the jobs handled by this "go-anywhere", rubber-tired LW tractor during a single work shift.



5 Cleans-up around crusher-grizzly as well as polices entire plant area . . .

6 Maintains haul roads as it "runs" from one job to the next . . .

See it in action

Let us show you how 17.2-mph, 218-hp Tournatractor can save you money on widely-separated dozing, towing and pushing jobs. Ask for complete facts and demonstration.

CT-2025-MQJ-1

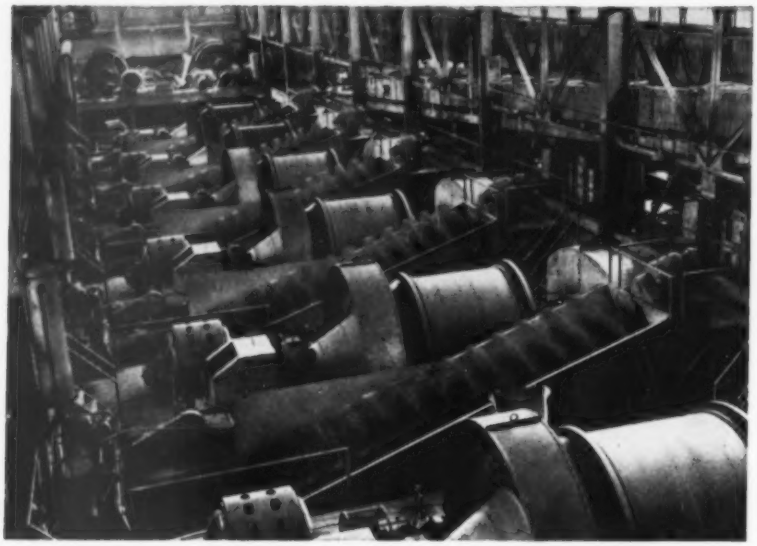
LW

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

CALUMET
NI-HARD* GRINDING BALLS



. . . Stand the Day-After-Day Grind

In wet or dry grinding, Calumet Ni-Hard grinding balls offer maximum wear resistance. For instance, in exhaustive tests made in wet grinding of copper ore, they offered 75% greater wear-resistance than any other type of ball. For dry grinding, the wear life proved to be 4 to 1 better than that of forged steel balls.

Calumet Ni-Hard grinding balls have been thoroughly job-tested not only in Calumet and Hecla operations but in the mills of a number of other leading concerns throughout the country. The results invariably have been shown in greater efficiency and lower costs—benefits that can also be yours once you have used Calumet Ni-Hard grinding balls in your own mills.

A complete range of sizes is available to you: 5/8", 3/4", 7/8", 1", 1 1/4", 1 1/2" and 2". Let us send you complete information. Write TODAY.

**Reg. U.S. Pat. Off., Intl. Nickel Co., Inc.*

CALUMET & HECLA, INC.
CALUMET DIVISION
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Enter 50 on card, page 167

World-Wide Cement News

Cement Industry in Turkey Entering Export Market

For the first time, Turkey has a surplus of cement after meeting domestic needs, and will export 100,000 metric tons to Middle Eastern countries as per recent agreements signed to that effect. Cement production had increased almost four times from 395,638 tons in 1950 to 1,261,187 tons in 1957—but it needed the additional rise to an estimated 2,000,000 tons in 1959 to exceed the steadily rising local demand.

Turkey has imported no cement since March, 1959. An exportable surplus of about 250,000 tons per year is expected by officials of the industry. The new plant at Elazig produced 21,722 tons of cement in its first four months of operation. It has a rated annual capacity of 85,000 tons.

Cement Output of Sweden Shows Increase over 1958

Sweden's production of cement in the first half of 1959 showed an increase of 15 percent over the figure for the same period of 1958, according to a survey made by the Institute of Industrial Investigations.

In actual figures, cement output totalled 1,322,000 tons, as compared with 1,127,000 tons in the January-June period in 1958. Sales showed a somewhat larger rise, with a consequent decline in stocks from 328,000 tons to 279,000 tons. Most of the production increase was registered in the second quarter, in which output was up 19 percent.

Automation Boosts Output At S. African Cement Plant

Pretoria Portland Cement Company's new £2,000,000 slurry addition to its plant near the Bechuanaland-Transvaal border has reportedly boosted production to 650 tons of cement per day. Maximum automation and mechanization accomplished the increased output.

A second unit has been approved, and provisions have been made for the eventual addition of a third.

Enter 51 on card, page 167 →

Over-the-edge-dump

Operator of LeTourneau-Westinghouse Rear-Dump can dump accurately and safely over edge of hopper or spoil pile because of machine's front-wheel drive, independent braking, and electric-controlled bowl. To dump, operator backs close to edge, sets brakes on rear wheels, leaving front wheels unbraked. He then flicks switch to instantly activate electric bowl-hoist motor. As bowl rises, it pulls prime-mover back, shortening wheelbase. Bowl swings deep behind rear wheels, stops roll-back of material . . . casts it out and away. Drive wheels of prime-mover always stay on firm footing, for fast getaway in case bank begins to cave in.

COMPARE

- capabilities of your present haulers
- advantages of L-W Rear-Dumps

Hauls through soft, slippery areas

L-W Rear-Dumps haul safely through areas where other units bog down. Here's why: (1) Exclusive power-transfer differential, automatically transfers power from a slipping drive wheel to wheel on better footing. (2) 90° kingpin electric steer . . . independent of drive train . . . helps you "duck walk" out of trouble. Operator just turns prime-mover left, right, left, etc., to swing drive wheels ahead until they "walk" out and reach solid footing. (3) Rear-Dump can be "humped" forward, when bowl is empty, to get out of soft areas. Bowl is raised with front brakes locked and rear brakes released, shortening wheelbase . . . then bowl is lowered with rear brakes held and front released. Thus, without use of drive wheels, Rear-Dump "humps" forward.

No-drag "skid bottom" construction

There are no springs, hangers, tie-rods cluttering up the bottom of your L-W Rear-Dump. Simple "skid bottom" construction eliminates drag over dirt and rocks. Bowl is hitched to prime-mover through a horizontal yoke extending back from kingpin, and pivoted to body itself . . . just above and ahead of rear wheels. There is no frame or sub-frame to get out of alignment. Front-wheel drive and kingpin steer eliminate long drive shaft, hinged steering connections.

Big target for fast, easy loading

L-W Rear-Dumps' big, wide, unobstructed top makes an easy target for your shovel operators. Low, wide rear entry of this hauler lets dipper swing in smoothly, quickly . . . in one continuous arc . . . rather than the up-over-in, up-over-out motions needed with high-top trucks.

Big, single tires absorb shock, eliminate trouble of duals

4 giant, low-pressure tires dissipate vibrations and stress of high-speed hauls . . . absorb shock of heavy loads dropped into bowl. They flex and roll easily over rocks that might bruise or break smaller duals. There is no divided face where wedged-in rock fragments can wear and tear.

Write or phone your local L-W Distributor for more information on these big-production, low-cost Rear-Dumps. They are available in 11, 22, and 35-ton sizes.

R-1871-MQ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

ROUGH ROCK WORK: American 700 Series Shovel

Only American Gives You This Exclusive Line

ON CRAWLERS—ON RUBBER—ON RAIL

Whatever your demands, American Off-Track . . . On-Track Cranes assure you of top production

Here is American dependability at its best . . . boosting production on any pit and quarry operation.

You can always count on the full line of American Crawlers, Truck and Self-propelled Cranes on the ground—Locomotive Cranes on rail—to give you maximum effort in every type of work. Serving industry for over three-quarters of a century, American equipment is now better than ever . . . better than any. Write us for complete detailed and illustrated catalog information.

VERSATILE DUTIES: American DiesELectric® Crane

LOADING HOPPER: American 300 Series Truck Crane

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

EXCAVATORS-CRANES to 2 yds.-60 tons
LOCOMOTIVE CRANES to 130 tons

DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons

Enter 52 on card, page 167

Multiple-Use Tractor Shown At Drott Field Demonstration

Because of its versatility, the International Drott T-340 Four-in-One can be used as a scraper, a dozer, a shovel, or a front-end loader for the removal of overburden.

ON September 16 and 17 the International T-340 tractor with the Drott 4-in-1 Skid Shovel attached was demonstrated to the members of various business publications at the Drott Proving Grounds, located near Tomahawk, Wis.

The T-340 is a new 31-drawbar-horsepower crawler tractor manufactured by International Harvester. It is designed primarily for industrial and commercial use. This small-sized tractor, weighing 5,600 lb., has all the advantages of traction, stability, and maneuverability that make it an ideal unit for a wide variety of earthmoving and material-handling jobs. The new unit expands the company's crawler tractor line to six basic power sizes, ranging from 31 d.hp. to more than 200 d.hp. for the International TD-24 torque converter crawler.

The International Drott 4-in-1 Skid Shovel is a rugged front-end loader which duplicates the operations of four specialized machines. Being hydraulically adjustable, the segmented-type bucket can serve as a standard bucket, a bulldozer, a carry-type scraper, and a clamshell. Selection of the desired machine action is made from the tractor seat by means of the machine selector lever; the changeover from one tool to another takes only seconds.

Skid-shoes mounted beneath the bucket serve as a fulcrum for a strong pryout action, giving the 4-in-1 the ability to work in tough or frozen soil, as well as to pry out stumps, boulders, and other heavy and deeply imbedded materials which the sheer lifting force of ordinary buckets is not great enough to handle.

This unit has a capacity of 5/8 cu. yd. struck and 7/8 cu. yd. heaped. The bucket dumps in two ways: it can dump in the conventional roll forward action, or through the bottom by lifting the front half of the bucket and letting the material fall through.

As a loader, the 4-in-1 is designed for tough digging and for prying out deeply imbedded materials. As a carry-type scraper, it can be used for stripping topsoil, sod, gravel, or unusually sticky materials. When set as a clamshell, the 4-in-1 bites the loose material, picking it up cleanly in its jaws. The front half or lip of the unit is raised all the way to form an efficient bulldozer.

The International Drott 4-in-1 was put through its paces both at the Drott Proving Ground and in a section where five ski runs were being constructed for the Tomahawk and Rhinelander areas. Obstacles such as trees, stumps, and boulders were encountered frequently and disposed of both efficiently and quickly.

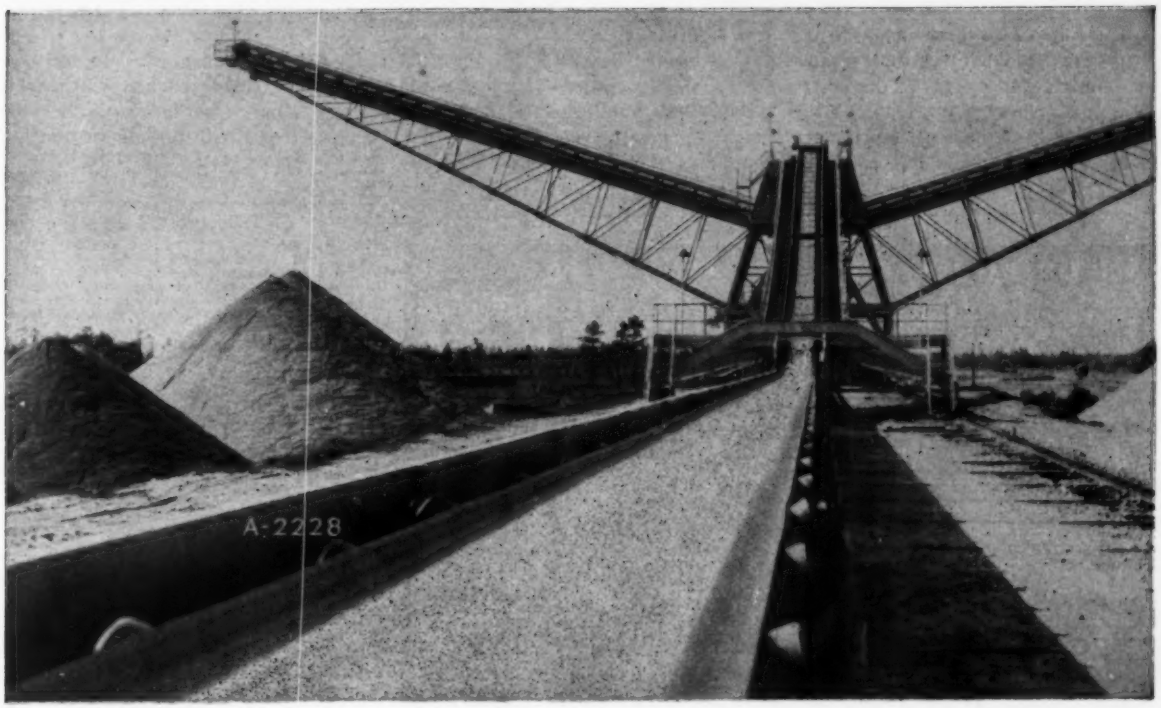
Increase Reported in 1958 For Dimension Stone Output

Production of dimension stone increased again in 1958 despite competition from manufactured products and reduced activity in certain types of building construction. Unit values increased for marble, sandstone, slate, and miscellaneous, but decreased for granite, limestone, and basalt, compared with 1957.

Output of dimension stone from 558 plants in 42 states and Hawaii in 1958, as reported by producers to the U. S. Bureau of mines, totaled 2,500,000 short tons, valued at over $80 million.

● Four veteran Calaveras Cement Company plant employees were recently presented with gold watches in honor of their completion of 25 years of service. The group (left to right) included Tormey Ward, transportation dispatcher; Tom Love, assistant plant manager; Grant W. Metzger, Calaveras vice-president in charge of production, who presented the awards; Marshall Dragomanovitch, assistant purchasing agent; and Lawrence Huberty, shift foreman.

STEPHENS-ADAMSON



BELT CONVEYOR SYSTEMS...lower handling costs!

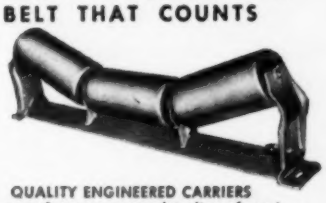
Nearly a half-century ago STEPHENS-ADAMSON engineered its first sand and gravel conveying system. Today, that system is not only performing efficiently but the company is a loyal S-A customer.

Since that first system was installed STEPHENS-ADAMSON engineers have engineered and built innumerable rock products handling systems — each calling for certain innovations, because as you know — every operator's handling problem is a little different. The final result with each new S-A installation is the same however . . . bulk materials are handled at the lowest cost per ton.

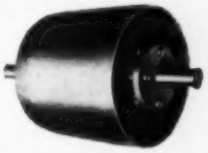
Profitable conveying of bulk materials over the belt is dependent on what's under the belt in quality-engineered conveyor components. S-A conveyor components contain features — (many of them patented) — found in no other conveyors on the market.

Write for bulletins 355 & 558 covering belt conveyor components.

IT'S WHAT'S UNDER THE BELT THAT COUNTS



QUALITY ENGINEERED CARRIERS
S-A manufactures a complete line of carriers, quality-engineered with features found in no other carrier regardless of price.



S-A CURVE CROWN® PULLEYS
Maximum belt training effect with minimum belt stretch and wear are provided with exclusive S-A CURVE CROWN design.

WRITE FOR BULLETINS 355 and 558 on Carriers and Pulleys

S-A
MATERIALS HANDLING PRODUCTS
SEALMASTER BALL BEARING UNITS

ENGINEERING DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 20 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

Honduras' First Cement Plant Now Producing at Rio Biajo

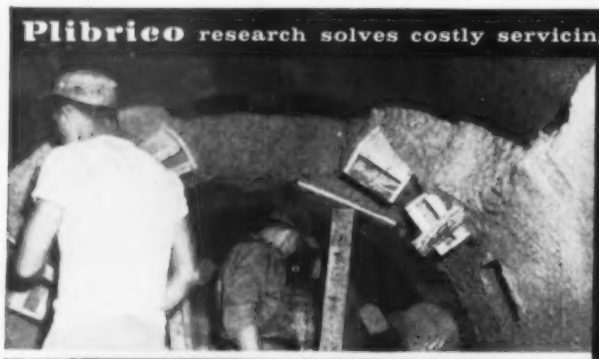
Directors of Cementos de Honduras have inaugurated the cement plant recently completed at Rio Biajo, Honduras, 20 miles north of San Pedro Sula. The firm was incorporated in 1956 for the purpose of building and operating the country's first cement plant, located near an extensive deposit of limestone.

When operating at full capacity, the plant will have an annual output of 53,420 tons. Beginning in August, the plant was expected to produce at a rate of 60,000 bags a month, a figure almost equal to the 1958 monthly cement imports into Honduras.

This firm obtained its capital of $3,500,000 almost entirely within the country and includes among its directors many of Honduras' leading businessmen. The plant is reportedly one of the most modern in existence, with automatic controls throughout, and an operating staff of 40.

Alsam Manufacturing (B.C.) Ltd., Saltspring Island, will build a plant and develop extensive blue shale deposits to provide lightweight aggregate.

Plibrico research solves costly servicing problems



PLIBRICO "80"
for extremely high temperatures
...2000-3300° F.
Excellent acid and abrasion resistance.
80% alumina; 14% silica.
Heat setting.
Available with air bond for greater strength.

SUPER AIR BOND
for severe high temperatures
...500-2800° F. with low-temperature bond.
Good acid and abrasion resistance.
43½% alumina; 50% silica.
Air and heat setting.

New plastic refractories take MORE PUNISHMENT in dryers, kilns, hoods, furnaces

These new refractories are designed especially to lower maintenance costs in cement, lime and gypsum plants. They form a continuous joint-free lining, even around contours, which prevents penetration of dust and chemicals which cause early deterioration. And you save the cost of special shapes.

Castable & Plastic Refractories, Ramming Mixes ... for Drying, Processing & Calcining Furnaces.

WRITE FOR FREE LABORATORY REPORT giving technical data. Ask your Plibrico Field Engineer how you can save time and money with his 3-in-1 service.

Plibrico REFRACTORIES

Serving the Furnaces of Industry 24 Hours a Day

PLIBRICO CO., 1810 Kingsbury, Chicago 14 • Canadian Plant: New Toronto, Ont.

Plibrico Sales and Service Throughout the World

REFRACTORY PRODUCTS • ENGINEERING • CONSTRUCTION

Enter 56 on card, page 167

STATEMENT OF OWNERSHIP

Statement required by the Act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of PIT AND QUARRY, published monthly at Chicago, Illinois, for October 1, 1959.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, PIT AND QUARRY PUBLICATIONS, INC., Chicago, Ill.: Editor, W. E. Trauffer, same: Managing Editor, W. E. Trauffer, same: Business Manager, William A. Wilson, same.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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Melva Mae Utley, same.
William T. Klussman and Lanetta B. Smith, Trustees of Bernice Joan Smith, Trust No. 1, Chicago, Ill.
William T. Klussman and Lanetta B. Smith, Trustees of Harry William Smith, Trust No. 1, same.
William T. Klussman and Lanetta B. Smith, Trustees of Ray Light Smith 3rd, Trust No. 1, same.
William T. Klussman and Lanetta B. Smith, Trustees of Stephen Howard Smith, Trust No. 1, same.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

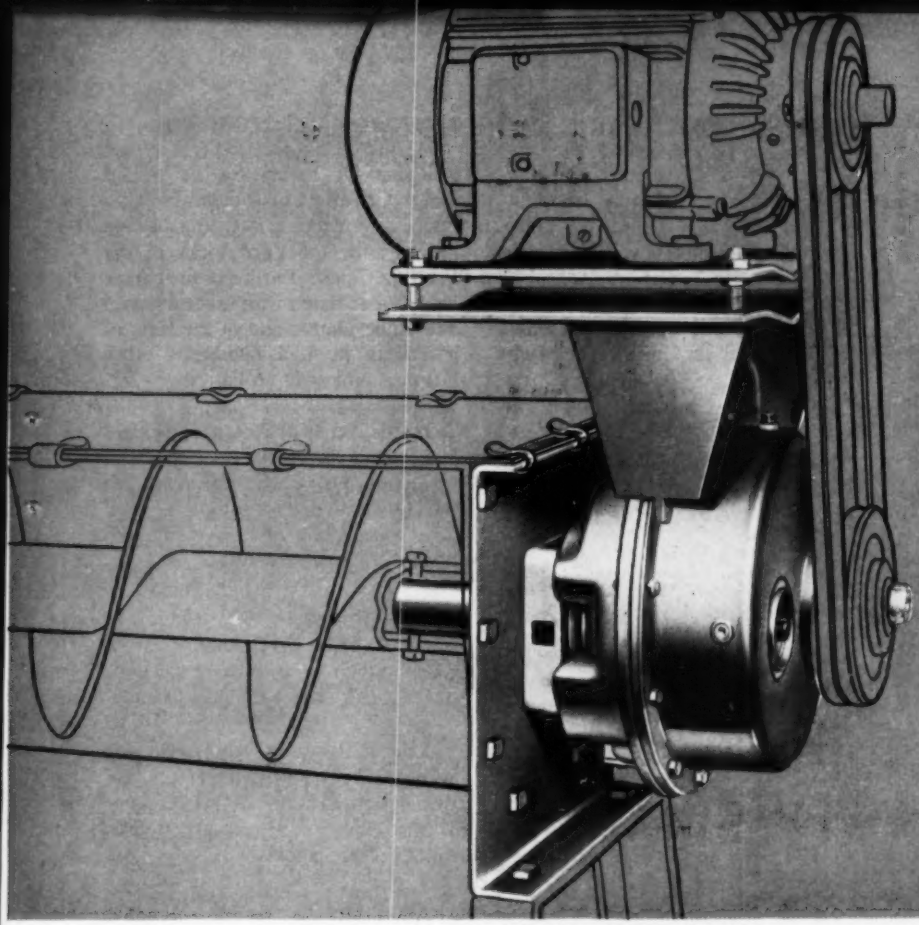
W. A. WILSON
Signature of Business Manager.

Sworn to and subscribed before me this 17th day of September, 1959.

(SEAL) JAMES G. KOSTKA.

(My commission expires May 25, 1960.)

Enter 57 on card, page 167 →



NEW! FALK Screw Conveyor Drive

U.S. and Foreign Patents Applied For

—the drive our customers asked for

Our customers helped us design this new unit. We sent our men into the field to find out what our customers needed in a screw conveyor drive—then our engineers designed a new drive that offers the maximum of service, versatility, operating economy and long life. Here are some of its outstanding features:

A COMPLETE DRIVE: Saves engineering and assembly time. Six sizes to cover entire range—each with these ratios: — 4:1, 9:1, 14:1 and 24:1. Bolts to any standard trough end—eliminates trough end bearing. Eliminates drive shaft wobble. Efficient FALK single helical gears.

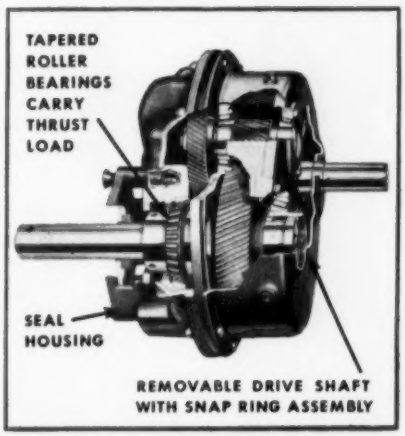
SEAL HOUSINGS: Choice of seals (neoprene or leather lip, felt or waste) to accommodate material conveyed. Space between trough seal and unit seal prevents conveyed material from reaching unit seal.

REMOVABLE DRIVE SHAFT: Snap ring assembly permits easy removal. Five sizes, from 1½" to 3 7/16".

TROUGH END: Can be fastened to any standard trough. Eight sizes, from 6" to 20".

ALL-STEEL MOTOR MOUNT: Saves costly engineering and installation time and costs; no motor plates to design or fabricate. Motor can be mounted in virtually any position. Pre-drilled to accommodate NEMA standard motors ½ to 30 HP.

AN IMPORTANT ECONOMY: Buy only what you need—the basic reducer alone, or with trough end and/or motor mount. For detailed information, contact your Falk Representative or Distributor—or ***write direct for Bulletin 7106.***



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Obituaries

WILLIAM M. MURPHY, 78, concrete and gravel contractor, died recently in Spokane, Wash. Mr. Murphy was president of the Union Sand and Gravel Company and the Central Pre-Mix Concrete Company in Spokane.

John D. Gregg

JOHN D. GREGG, 61, president of California Materials Company, Whittier, Calif., died on September 23, 1959, in a Los Angeles hospital. He was also treasurer and a director of the Concrete Aggregates Company and actively interested in a firm which built thousands of homes in the San Gabriel Valley of California.

During World War II, Mr. Gregg was sent to Panama by the United States Government to establish two crushed stone plants producing aggregates for the third locks in the Panama Canal. Earlier in his career he was associated with several gravel and stone plants; and at the time of his death he had numerous other business and civic affiliations.

JAMES ALBERT RIGG, president and treasurer of Acme Limestone Company, Fort Spring, W. Va., died on September 21. Mr. Rigg was also a member of the company's board of directors.

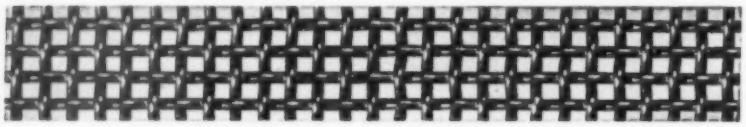
TOM JOHNSTON, 38, owner and operator of Tom Johnston Gravel Company of Grand Haven, Mich., died recently after a heart attack.

VIRGIL BOWMAN REID, 60, vice-president, general manager and co-owner of Caldwell Stone Company, Danville, Ky., died recently after an illness of six weeks.

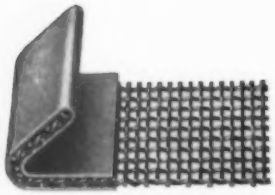
MELVILLE G. KERR, vice-president in charge of Detroit operations of American Aggregates Corporation, died recently after a heart attack. His long career with the firm began in 1917. He was also a member of the board of directors of the National Sand and Gravel Association, having served in that capacity for many terms of office.

EARL P. HOLWADEL, vice-president and sales manager of the Ohio Gravel Company, Cincinnati, Ohio, died recently. He was affiliated with the National Sand and Gravel Association for many years, and also took a prominent part in activities of both the Ohio Sand and Gravel Association and of the Indiana Mineral Aggregates Association.

THOMAS H. ROBERTS, 59, president of the R & M Sand and Gravel Company, Columbus, Ohio, was killed recently when a five-ton shovel fell on him while he was inspecting a newly opened gravel pit south of Reynoldsburg. The bank gave way under the weight of the shovel, and the bucket hurled Mr. Roberts against the far side of the pit.



TYLER SCREENS LAST LONGER

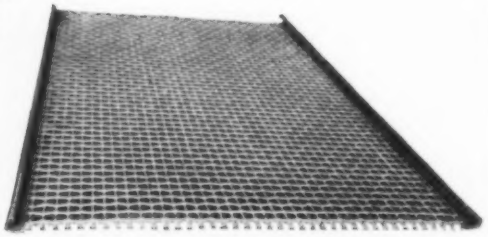


Tyler Type "AX" Hook Strip. For wire diameters from .047" to 5/16" inclusive.

Tyler Woven Wire Screens are woven with laboratory approved wires on precision machines. The high quality of Tyler Screens is apparent in their long life and service under the most difficult of screening conditions.

Tyler Screen Sections are furnished for all makes of vibrating screens in all meshes and metals. Each section is fabricated with the right type of edge or hook strip for the specification of screen cloth and to fit the particular make and model of screening machine on which it will be used.

Tyler Type "CX" Hook Strip. For wire diameters .041" and smaller.



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THE W. S. TYLER COMPANY
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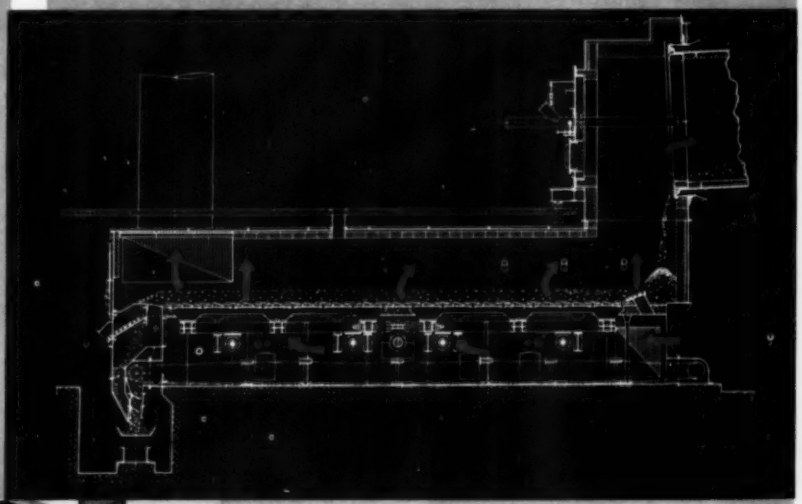
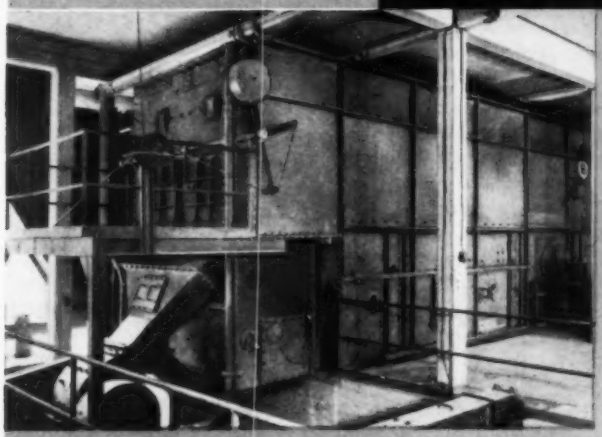
HORIZONTAL GRATE COOLER

FOR CEMENT CLINKER





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- Extra heavy construction.
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- Bulletin No. FC1059 on request.

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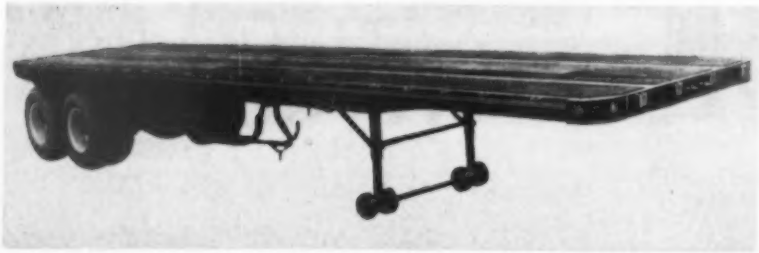
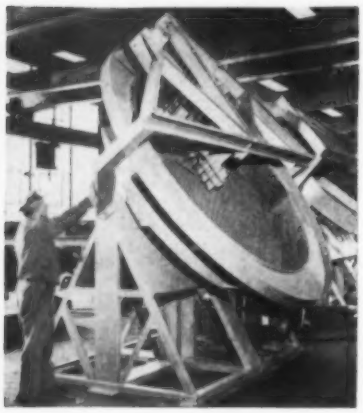


● Talbert Trailer's new TF25-35 lightweight flat bed trailer features structural wide-flange construction on main frame members for added payload capacity.

Offered at an empty weight of 10,500 lb., this 35-ft., tandem axle flat bed has a rated payload capacity of 50,000 lb. (351)



● Dravo Corporation has in production a standard line of pelletizing-mixing discs for the continuous agglomeration and mixing of a wide variety of fine granular solids. The discs are made in 3-ft. 3-in., 8-ft. 6-in., 12-ft., and 16-ft. 6-in. diameters.

The discs are used extensively in the mining industries for the agglomeration of ore concentrates. When used for mixing, the discs are run at substantially higher speeds and thus can handle large volumes of material in relatively short times.

Phosphate rock fines, cement rock and lime and coal mixtures used in the preparation of calcium carbide are among the materials successfully pelletized in the Dravo Research Center. This experience indicates that most fine materials can be pelletized to any size from 1/16 in. to 1⅓ in.

Fines are fed onto the disc and water or waste liquors are sprayed on them. The disc's rolling action pelletizes the fine material and automatically classifies the pellets.

In mixing applications the rotation of the disc produces a tumbling, cascading action in the materials to be processed. Mixing may be done with or without agglomeration of materials in process.

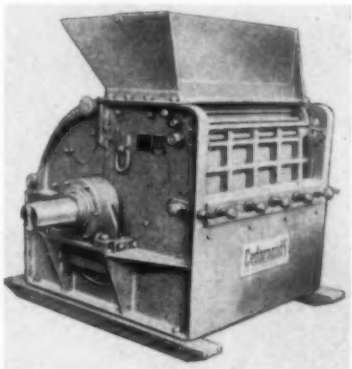
Since retention time is readily controlled by changing the disc's speed of rotation and angle, it is possible to employ Dravo's standard size units to meet a wide variety of production requirements.

Developed and designed by the Lurgi Company, Frankfurt, Germany, and adapted to American standards, the discs are manufactured in the U.S. by Dravo under an exclusive license agreement. (352)

● An improved design involute-type Cyclo-Trell mechanical dust collector developed by Research-Cottrell, Inc., permits the high efficiency collection of abrasive or heavy dust loadings such as may be found in cement plants. Virtually any size job can be handled through the wide variety of arrangements made possible by the new Typo IC collectors.

To handle high abrasive dusts, such as blast furnace dust, the involute type collectors can be fitted with steel mesh liners incorporated with castable cements. Combined involute and tubular-type units can also be provided.

Larger diameter tubes and a new hopper discharge valve are included in recent design improvements in Research-Cottrell high-efficiency mechanical dust collectors. The new Type C24 collector combines the advantages of a larger tube diameter with the high efficiency of the Aerovane tubular design. The new hopper discharge valve is available in both single and double arrangements, in a wide range of sizes. (353)



● The largest hammermill ever built by the Iowa Manufacturing Company has been announced as the Model 5040. This new unit is designated by the 40-in. hammer arc and 50-in. width of feed opening. It consists of large, heavy-duty, heat-treated chrome-nickel-steel shaft and bearings; a main frame fabricated of heavy rolled steel plate for maximum strength; a reversible one-piece manganese casting breaker plate, adjustable so it can be set at the correct angle; replaceable hammer tips, adjustable outward on the spinner, that can be turned for six wearing positions; sectional manganese steel casting grates; cover hinges for easy access to hammers; and a

and equipment

for further information use card on page 167

heavy spinner of abrasion-resistant steel.

Size of finished product is easily controlled by moving the breaker plate closer to the hammers which cause more impact breaking and finer products. When smaller product size is desired, a grate with narrow openings between the bars is used, or the hammer speed increased. When larger grate openings are used, or shorter hammers, the product size becomes larger.

The new hammermill is equipped with the standard three rows of hammers. This unit can be easily changed to a two-row hammermill, with or without grates.

The Model 5040 has been designed to give a combined impact breaking and milling action that provides a big volume of uniform cubical shaped aggregates, and high quality aglime with capacities increased by 40 percent. **(354)**

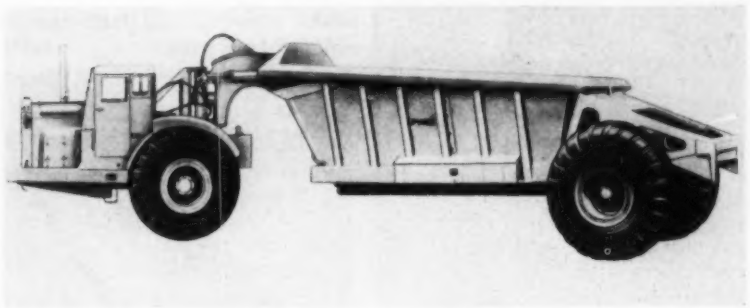
● Stephens-Adamson has developed three styles of Tellevel bin controls, including normal-duty, explosion-proof, and heavy-duty models.

Each Tellevel control is a self-contained unit with a pendant float, which operates a sensitive enclosed switch. Mounted in the bin or tank, the Tellevel control will stop or start feed conveyors or elevators as the material level rises or falls. The units can be installed to operate warning lights or horns. Automatic control or signal systems can be arranged by installing one or more Tellevel controls near the top, bottom, or at various levels in a bin or tank in which bulk materials are stored.

Ordinarily, the Tellevel control is connected for a normally-closed circuit, but can be connected for a normally-open circuit just as easily. Using a normally-closed operation as an example: a rising level of material will tilt the Tellevel float ball, the switch will shut off the current, and stop the feed conveyor, elevator, or pump. When the level falls, the float returns to vertical position, the switch closes, and feed is resumed.

In the case of an enclosed conveyor and bin, the Tellevel control is valuable in preventing choking and actual damage to conveyors and elevators. The Tellevel needs no lubrication or other maintenance.

The normal-duty Tellevel is used for light to medium weight granular material. The explosion-proof unit is applied to hazardous locations, and the heavy-duty style is used for heavier, lumpy materials. **(356)**



● Athey Products Corporation has available a new 35-ton capacity bottom dump trailer for use with the Caterpillar DW21 tractor. Called the PW21, the new trailer has a third (or rear) door, in addition to two 3-ft. wide bottom doors. The third door, together with steep side plate angles (18 deg. off vertical) and a high, 5-ft. rear clearance, permits the PW21 to dump instantly with no hang up and allows the unit to ride out over the dumped load.

The PW21 has a heaped capacity of 27 cu. yd. and a struck capacity of 23 cu. yd.

Prime mover for the PW21 is the 345-hp. Caterpillar DW21 tractor. The PW21-DW21 team has speeds up to 27.9 m.p.h. and will make non-stop turn in 40 ft.—over 1½ ft. less than the length of the unit.

Another feature of the PW21 is the hydraulically-actuated door mechanism. Doors are locked—not merely closed—which relieves the hydraulic system of all load and eliminates haul road spillage. The doors are closed by a hydraulic ram driving a cable take-up. Doors can be opened instantly or slowly when dumping. **(355)**

● Madsen Works, Division of Baldwin-Lima-Hamilton Corporation, offers a new Model 567 highway-airport base stabilizer plant. Cement, calcium chloride, or bitumens can be used as stabilizing agents.

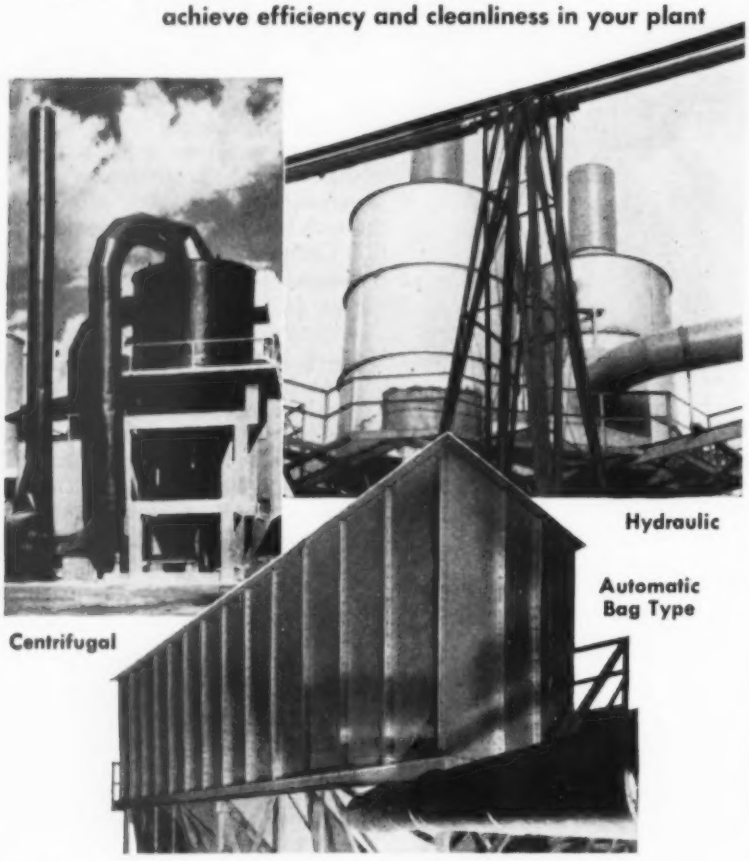
The pugmill mixer is a twin-shaft continuous type, designed for approximately 600 t.p.h. of stabilized base. A new push-pull gate controls the mixing pressure by maintaining a constant and desired depth of material in the pugmill.

Cold feed can be brought into the mixer on either side of the plant or at the end. A large aggregate receiving hopper directs the flow of material to the mixer. A drive-through-way is provided in either

Get rid of dust!

It's expensive!

Norblo Dust and Fume Collection helps you achieve efficiency and cleanliness in your plant



Any dust or fume condition can slow down employee performance, increase spoilage and industrial accidents. All of which costs money – and *increased operating and maintenance costs.* Norblo helps you to achieve outstanding efficiency in dust and fume collection – helps you to avoid these costly factors economically.

Norblo's valuable experience of almost 50 years in three principal dust collection methods is widely recognized in industry. The Norblo patented Centrifugal system is often installed in combination with the Norblo Hydraulic Collector or Norblo Bag Type Collector – the most imitated *automatic* bag type dust arrester.

High recovery with low operating and maintenance costs is the record of Norblo dust and fume collection installations. Ask your consultant, or write direct for information about Norblo *guaranteed* performance.

The Northern Blower Company

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Norblo ENGINEERED DUST COLLECTION SYSTEMS FOR ALL INDUSTRIES

Enter 62 on card, page 167

of two directions. The mixed material hopper is located in the center of this drive-through area. The discharge of the mixer to the mixed material hopper is located in the center of the drive-through-way. There is a 9 ft. 6 in. clearance for trucks. An air-operated clamshell gate is used for discharge to trucks.

The plant is constructed in separable units—leg frame, mixed material bin, continuous mixer, and engine frame. Anti-friction bearings are used throughout.

With electric drive, a pushbutton station on the mixer operator's platform permits a simultaneous starting and stopping of aggregate feed, cement, and water.

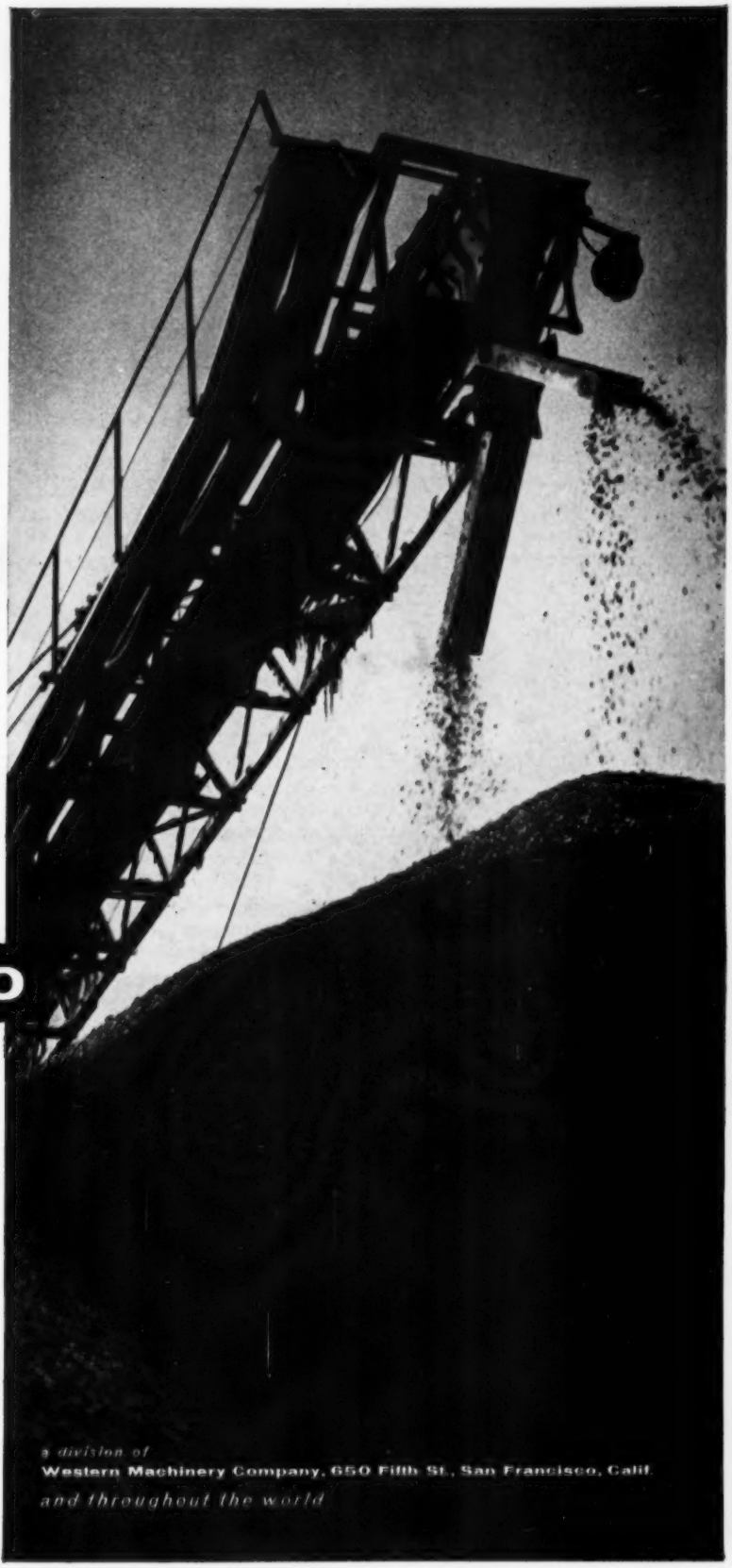
Other appurtenances, such as cold feeder conveyor and bulk cement silo, can be provided. **(357)**

● An extra-long dump trailer package that substantially reduces deadweight to enable users to meet bridge laws imposed by individual states is now available from the Hercules Steel Products Company.

The 28-ft. steel bodies are mounted on 31-ft. chassis to ob-

MORE AND MORE THE ANSWER TO LARGE VOLUME SPECIFICATION AGGREGATE AT LOW COST IS

WEMCO



More often than not an analysis of an aggregate production problem today will come up with WEMCO as the sound solution.

The reason: WEMCO's near-20 years of experience in the development of equipment and methods, aiding operators to keep pace with increasing volume demands and stricter specifications.

WEMCO equipment for preparation, beneficiation and handling of aggregate is at work in hundreds of installations.

We'll be happy to discuss your operation in terms of profitable steps for the future.

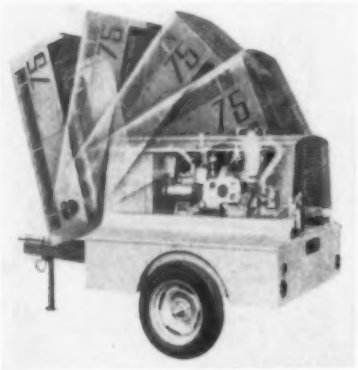
a division of
Western Machinery Company, 650 Fifth St., San Francisco, Calif.
and throughout the world

Enter 63 on card, page 167

tain a maximum legal payload of 43,000 lb. The new dump trailer bodies, which are of corrugated steel construction to minimize weight and still maintain structural strength, are also available in aluminum models. (358)

● Le Roi Division, Westinghouse Air Brake Company, is producing the new Le Roi 75RG1, a single-stage, portable rotary air compressor. Rated at 75 c.f.m. of free air compressed to 100 p.s.i., the unit is powered by a gasoline engine. Engine drive is transmitted directly to the compressor through a hard rubber flywheel ring gear.

A rust-proof aluminum housing that can be tilted up for full-view servicing of engine and compressor is a feature. Dry weight of the unit

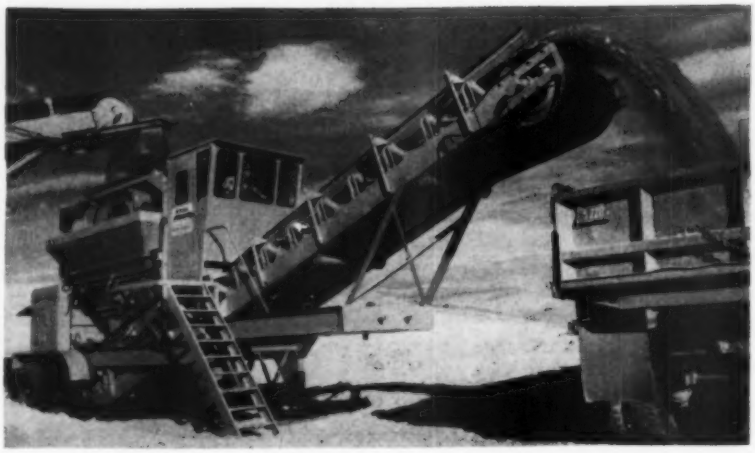


is 1,605 lb. The manufacturer reports that one man can deliver and spot the compressor.

All instruments on the 75RG1 are grouped on one panel, accessible through a hinged door in the housing. A high temperature safety switch protects from overheating.

The pressurized cooling system includes a radiator-type oil cooler located ahead of the engine radiator. For cold weather operation, the unit is equipped with a 12-v. electrical system and a thermo by-pass valve and a new, sliding vane-type oil pump.

A 100 percent capacity modulating control matches air supply to demand so that the correct amount of pressure is delivered to the air tool or spraying equipment. Full load speed of the four-cylinder engine is 1,850 r.p.m.; unloaded speed is 1,000 r.p.m. (359)



● An automatic weighing loader which can handle up to 720 t.p.h. has been developed by the Western Conveyor Company. Known as the Schrock Speed-Weigh, this conveyorized bin scale loader eliminates the need for separate platform scales.

The Speed Weigh is pulled into location by a standard highway transport tractor, and is quickly made ready for operation.

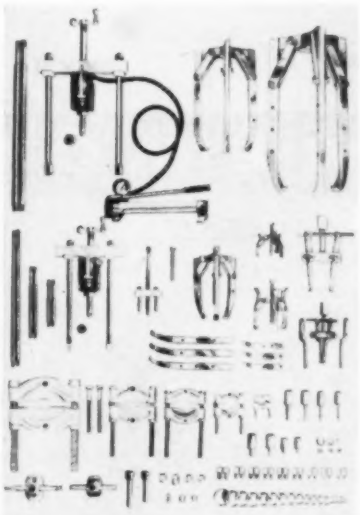
In the main frame, suspended on an electronic load cell weighing device, is a weigh hopper of over 8-ton capacity, above which is a surge hopper of 4-ton capacity. Both hoppers have air-operated glass automatically actuated by signals from the electronic weighing system.

The dust-tight, air-conditioned operator's cab contains the controls and recording equipment. The loading conveyor extending from under the hopper assembly and inclined up under the operator's cab has a heavy-duty 42-in. wide belt driven by a 40-hp. Schrock motorized pulley at 616 f.p.m.

Operation is continuous where feed is adequate and sufficient hauling units are available. The hoppers are fed from a storage bin, or feeder, until the pre-set weight is reached when a signal from the load cells closes the surge bin gates and the weight of the material, along with the load number, is automatically recorded on a printed scale ticket. This is also recorded on a tape retained in the scale-recording unit and provision is made to print the hauling unit number on the tape as well.

When the surge hopper gates are completely closed, the weigh hopper opens and discharges the material onto the loading conveyor belt.

Batch weights of from 1 to 8 tons in 50-lb. increments can be instantly set with a dial. Thus, total capacity of any hauling unit can be divided into an equal number of batches. An interlock system is built into the Speed-Weigh as a safety feature which will automatically shut off the feed conveyor and prevent overflow of the surge hopper should any of the operation fail. (360)



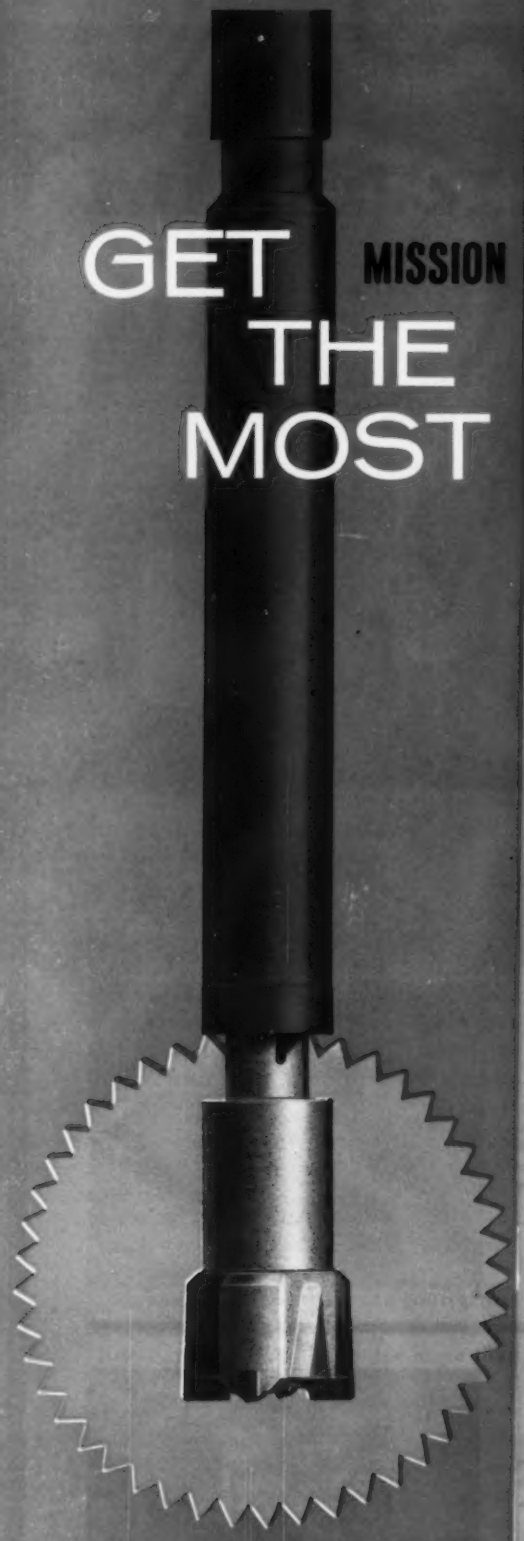
● Hydraulically-operated maintenance tools for servicing industrial crawler tractors and earthmoving equipment make up the OTC maintenance set No. Y-1750, available from the Owatonna Tool Company.

The set includes pullers, attachments, and adapters to fit all types of equipment, plus 17½- and 50-

Enter 65 on card, page 167 →

GET THE MOST

MISSION HAMMERDRIL FOR HARD ROCK DRILLING



The Mission HAMMERDRIL® is a "bottom hole" pneumatic impact tool for high speed, low cost drilling through the hardest rock. The design makes for economy: there are only two moving parts in the high pressure tool, and only three moving parts in the low pressure tool. Impact parts are heat-treated, high alloy steel; moving parts are friction and wear resistant. You can use it on your present rotary rig with suitable compressor capacity. Mission HAMMERBITS® feature massive tungsten carbide inserts which can be *resharpened in the field.* The Mission HAMMERDRIL® is sold and serviced throughout the United States. Write for more information on the savings you, too, can expect when you buy the *most.*

MISSION MANUFACTURING CO.

MISSION MANUFACTURING CO., *P. O. Box 4209, Houston, Texas, cable address "MISSCO" • export office: 30 Rockefeller Plaza, New York*
In the United Kingdom: MISSION MANUFACTURING CO., LTD., *17 Hanover Square, London W. 1 England • cable address "MISSOMAN"*

PAYLOADER® TEAM

The H-90 with its 9,000 lb. carry-capacity, 40° bucket tip-back at ground level, and 162 h.p. turbo-charged diesel gets and moves 3 yd. bucket loads from pile to truck in fast efficient cycles with minimum spillage loss.

The 110 h.p. Model H-70 with 7,000 lb. carry-capacity and 2 yd. bucket teams up with the bigger H-90 to load big tandems in a hurry or to load smaller trucks with material from other stockpiles.

LOADS 10,000 TONS PER DAY

Holly Mfg. & Mining Co. produces 16 classifications of material — ranging from fine asphalt sands to 2½" stone — from its pits in the Holly, Michigan area. It is presently supplying aggregate for Denton Construction Co.'s paving contract on State highway M-78 relocation.

To make sure that its gravel is well within the State Highway Department specifications Holly uses heavy-media separation as well as conventional washing methods. And to be sure that it has flexibility, capacity and reliability on its truck-loading operation it has two "PAYLOADER" tractor-shovels. These two machines — a Model H-90 with 3-yd. bucket and a Model H-70 with 2-yd. bucket — load as many as 250 trucks (40-ton tandems) on a busy day, and regularly average about 100 trucks a day — plus stock piling and clean-up work.

W. D. Hancock, Manager of Holly Mfg. & Mining Co. says, "We are well satisfied with these two machines" and the "PAYLOADER" operators are especially impressed by their "ample power, ease of operation, maneuverability and loading speed."

Pit and plant operators and contractors have been profiting with 4-wheel-drive "PAYLOADER" work-ability for more than eleven years. Most of those pioneer machines are still at work. And today's 4-wheel-drive "PAYLOADER" units are also far ahead of the field — in performance, ease of operation and usefulness — and are available in a complete range of sizes from 5,000 to 12,000-pound carry capacity.

Backing up "PAYLOADER" performance is the finest Distributor organization in the rubber-tire tractor-shovel industry — with complete facilities. Contact your Hough Distributor today and find out what a modern "PAYLOADER" can do for you.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
750 Sunnyside Ave., Libertyville, Ill.

Send data on all "PAYLOADER" models and attachments

Name.....

Title.....

Company.....

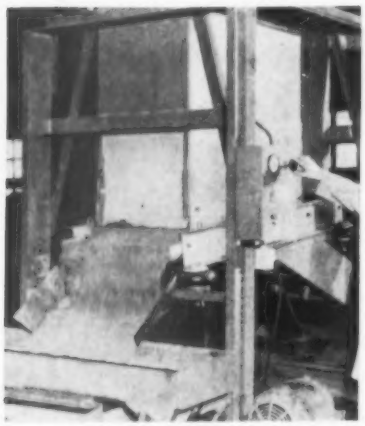
Street.....

City..... State.....

11-8-4

ton OTC Power-Twin hydraulic units which can be used on other hydraulic equipment as well.

Any maintenance operation requiring the removal and installation of gears, bearings, sheaves, pulleys, bearing cups, shafts, sleeves, couplings, and other tightly fitted parts can be accomplished easily with this set of tools. (361)



● Carrier Conveyor Corporation has introduced the Amplitrol feeder, a mechanical vibrating feeder with a pneumatic control system. Fully variable, stepless amplitude control, and Carrier's Natural-Frequency drive are two primary operating features of the Amplitrol feeder.

The Amplitrol feeder is ruggedly constructed with a heavy frame and single channel steel trough, yet it is easy to operate and extremely simple in design. The motor and two banks of air springs are the only moving parts.

The drive unit is composed of a 900 r.p.m., a.c. motor-exciter mounted between two banks of heavy-duty air springs. Motor-exciter and springs are set in a sturdy drive housing which can be mounted either above or below the trough.

Small offset weights are mounted on each end of the motor's double shaft. The motor size is governed by the size of the trough, and in standard models only ½ hp. is required to drive troughs up to 24 in. by 8 ft. The largest standard size, 60 in. by 8 ft., uses only 3 hp. Dust-tight operation is provided by the totally-enclosed, non-ventilated 220/440 motors.

Stiffness of air springs can be accurately and quickly changed during operation by an ordinary air valve. Amplitrol feeders require only an ordinary 50 p.s.i. plant air supply system. Control can be local or remote, manual or automatic.

Under operating conditions, the motor rotates the exciter weights which generate a concentrated centrifugal force against the springs. At natural frequency the springs amplify this force into powerful vibrations that drive the trough.

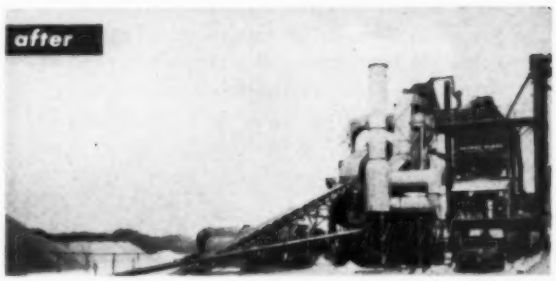
The springs provide about 90 percent of the force required to drive the trough once the vibrating stroke has been pneumatically selected. Capacity is unaffected by head load because the spring system automatically increases stroke under load. (362)

● "Three-way" cleansing action is a feature of the Bollard No. 3565 dust washer, a development of the Bollard Asphalt Plant Division of The Colonial Iron Works. Available in three models with capacities from 16,000 to 65,000 c.f.m., this dust washer is offered as a standard component of Bollard's line of equipment and is adaptable to all other makes of asphalt plants.

Plant exhaust of hot air, gases, and escaping fines from the primary collector is subjected to Bollard's "three-way" action: baffle, spiralize, and scrub. Baffling serves to delay and change exhaust flow direction, aiding in separation of particles. Spiralizing is a forced swirling motion which throws particles to impinge on wet surfaces. Scrubbing is a series of interlaced, adjustable water spray patterns to filter out particles from swirling gas.

Number and sizes of spray nozzles, plus direction and pressure of spray patterns provide correct droplet size, distribution, and velocity to wet and scrub entrained particles most effectively. Impingement action traps all sizes of dust particles. Cleaned exhaust passes out of the stack. Continual downward flushing of internal surfaces by scrubbing water renders the unit self-cleaning.

The dust washer can be mounted at grade or on an elevating support structure and engineered to adapt to existing plant installations. The unit includes water pumps from 150-300 g.p.m. at 100-125 p.s.i., with strainers for the recirculation of water from the reservoir. Of simple compact, unitized design, the dust washer has no moving parts, and requires minimum space and maintenance. Large access doors with rubber gaskets are conveniently located in each compartment for easy inspection of the interior. (363)



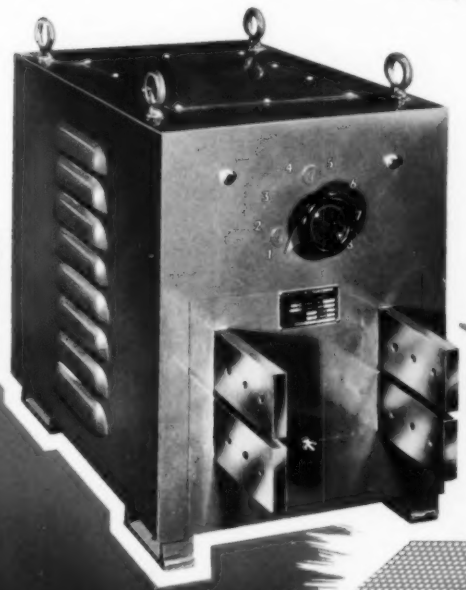
Asphalt plant shown before and after installation of a Bollard No. 3565 dust washer.

Enter 69 on card, page 167 →

WHY LET WET WEATHER PUT A DAMPER ON YOUR SCREENING CAPACITY?

Install

CONVERTA-SCREEN



on vibrators... begin **NOW** heating the cloth... boosting production... meeting "tight" specifications

SCREEN HEATING

Transformers

INCORPORATED

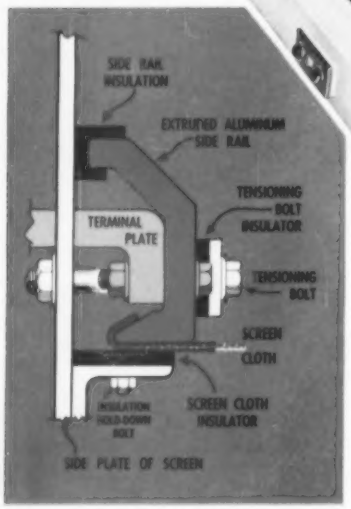
Telephones: TEmple 3-8624, TEmple 3-8548

Office and Plant — 428 Erie Street South

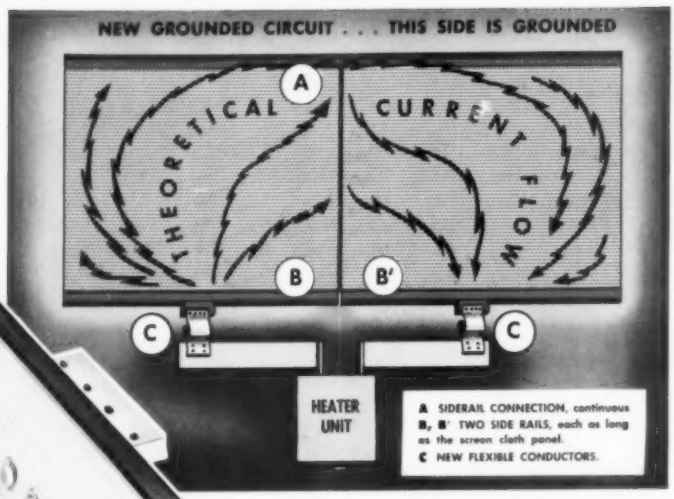
P. O. BOX 283 • MASSILLON, OHIO

EXTRUDED ALUMINUM SIDE RAIL

PATENT APPLIED FOR



END VIEW OF SIDE RAIL AND CONNECTIONS



TYPICAL SCREEN HEATING INSTALLATION for single or multiple deck using series connection.

MODERN ADVANCES thru use of MODERN METALS

Heated screens are no novelty today . . . but there are new and truly inventive solutions to problems that have plagued earlier users. The weaknesses of "blacksmith era" heating equipment have now been completely eliminated by EXTRUDED COMPONENT PARTS. Only **CONVERTA-SCREEN** has extruded bus rail with perfect profile-matched insulation. Only **CONVERTA-SCREEN** has completely leakproof screen cloth panel seal.

NON-FERROUS BUS RAIL introduced by **CONVERTA-SCREEN** ends the old hazard of holes burned in screen cloth by tramp iron. Now, with anti-magnetic **CONVERTA-SCREEN** bus rail, there is no attraction for trouble-making iron.

NEW FLEXIBLE CONDUCTORS of laminated aluminum replace various copper cables. (Cables repeatedly proved faulty ever since screen heating was introduced.) **CONVERTA-SCREEN** conductors respond to vibrator motion with spring action between screen body and stationary unit (transformer and distribution parts). There is no drag on the finely balanced vibrator assembly.

NEW GROUNDED CIRCUIT cuts your maintenance in half. Only one side of your present vibrator is modified with new electrodes. The other side need not be insulated in any way. Modern engineering and design of this new circuit revolutionizes screen heating. Get "features of the future" **NOW** IN **CONVERTA-SCREEN**. Be years ahead in your equipment, dollars ahead in profitable uninterrupted operation.

EASY TO INSTALL

Bus bars, skirt boards, connectors, insulators, bolts, etc., come to you with complete instructions on installation and operation of the equipment.

KEEPS SIZING UNIFORM

Heated screens maintain a specified particle size to meet strict Federal and State standards.

UP TO 800% LONGER LIFE

Heated screens end the threat of pile-ups and strains that can break the mesh. No hammering, no torch, no bouncing chains to "rough up" the mesh.

SAFE, SHOCK-PROOF

Exposed conductors, bus bars and skirt boards carry only as much voltage as the average toy electric train.

HEAT ANY DECK, OR ALL

Completely adaptable CONVERTA-SCREEN connects to top, center or bottom decks of any type vibrator.

DUST CAN'T HURT IT

CONVERTA-SCREEN transformers have only one moving part, and that is enclosed in a dust-tight case.

FREE EQUIPMENT ANALYSIS

FILL IN THE BLANKS AND MAIL NOW. THERE'S NO OBLIGATION.

Screen Heating Transformers
P. O. BOX 283 • MASSILLON, OHIO

Gentlemen: We need specific details on heated screens for the equipment now in service here, as follows:

Make of screen _____ Number of decks _____

Width _____ Length _____ Wire Diameter _____ Mesh _____

Voltage in plant _____ Phase _____ Cycle _____

☐ PLEASE HAVE YOUR REPRESENTATIVE CALL AT OUR PLANT

Company Name _____

Street _____ Phone _____

City _____ Zone _____ State _____

Signed _____ Title _____

SCREEN HEATING *Transformers* INCORPORATED

Telephones: TEmple 3-8624, TEmple 3-8548

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● Link-Belt Speeder Corporation is producing a new HC-78A Zephyr-crane which it describes as the first 30-ton machine in the ¾-cu. yd. class. Link-Belt further states that this new truck-crane, with an 8-ft. overall width, can travel on highways without a special permit; and that because it weighs just over 60,000 lb. it can travel legally in most areas without stripping major components. The counterweight or both front and rear outriggers can be readily removed if necessary.

The main operating machinery features the same full-function design concept found on all Link-Belt Speeder models. Separate sets of shafts, gears, and clutches permit individual power flows for all machine operations.

Speed-o-Matic controls are standard, as well as an independent rapid boomhoist with boom lowering clutch, retractable high gantry, hydraulic controlled swing brake, spring loaded rigid boom backstops and foot throttle. Among the several optionals are jibs up to 40 ft. long, safety boom limiting device, and 10- or 12-part boomhoist lines.

A choice of two different carriers, built to Link-Belt Speeder specifications, offers road speeds up to 45 m.p.h., hydraulic power steering, bogie beam rear tandem axles, screw type outrigger jacks and lightweight pontoons. (364)

● Two new Trojan tractor shovels, designated Model 134 and Model 164, have been introduced by The Yale & Towne Manufacturing Company.

The Model 134 has a lifting capacity of 8,000 lb. Buckets of 1-, 1⅓-, and 1⅔-cu. yd. capacities are available. This unit has a dumping clearance of 10 ft. 2 in. under the bucket hinge pin, and 8 ft. 8 in. under the bucket cutting edge.

The Model 164 has a lifting capacity of 10,000 lb., and a dumping clearance of 10 ft. 3 in. under the bucket hinge pin, and 8 ft. 6 in. under the bucket cutting edge. Buckets of 1⅓-, 1⅔-, and 2-cu. yd. capacities are offered.

Both models are available with either gas or diesel power, and are equipped with full power shift three-speed transmission and a 3.5:1 torque multiplying torque converter. High tractor differentials in the axles are designed to transfer power to the wheel obtaining traction.

Maximum operation efficiency, excellent service accessibility, 360-deg. visibility, and maximum personal safety for the operator are additional features. (365)

CON-O-WEIGH

the complete control system...

CON-O-WEIGH is a highly accurate continuous belt scale for weighing free-flowing bulk materials. It is engineered as a complete control system for many of industry's most technical feeding, weighing, blending and totalizing operations. CON-O-WEIGH is also widely used for simple weighing and recording routines on a tons-per-hour basis.

For your specific bulk material weighing problem get the facts on this rugged, easy to install machine.

Write for free bulletin 57-A

INDUSTRIAL PHYSICS and ELECTRONICS CO.

470 So. 10th East Phone DA 8-8678
Salt Lake City, Utah

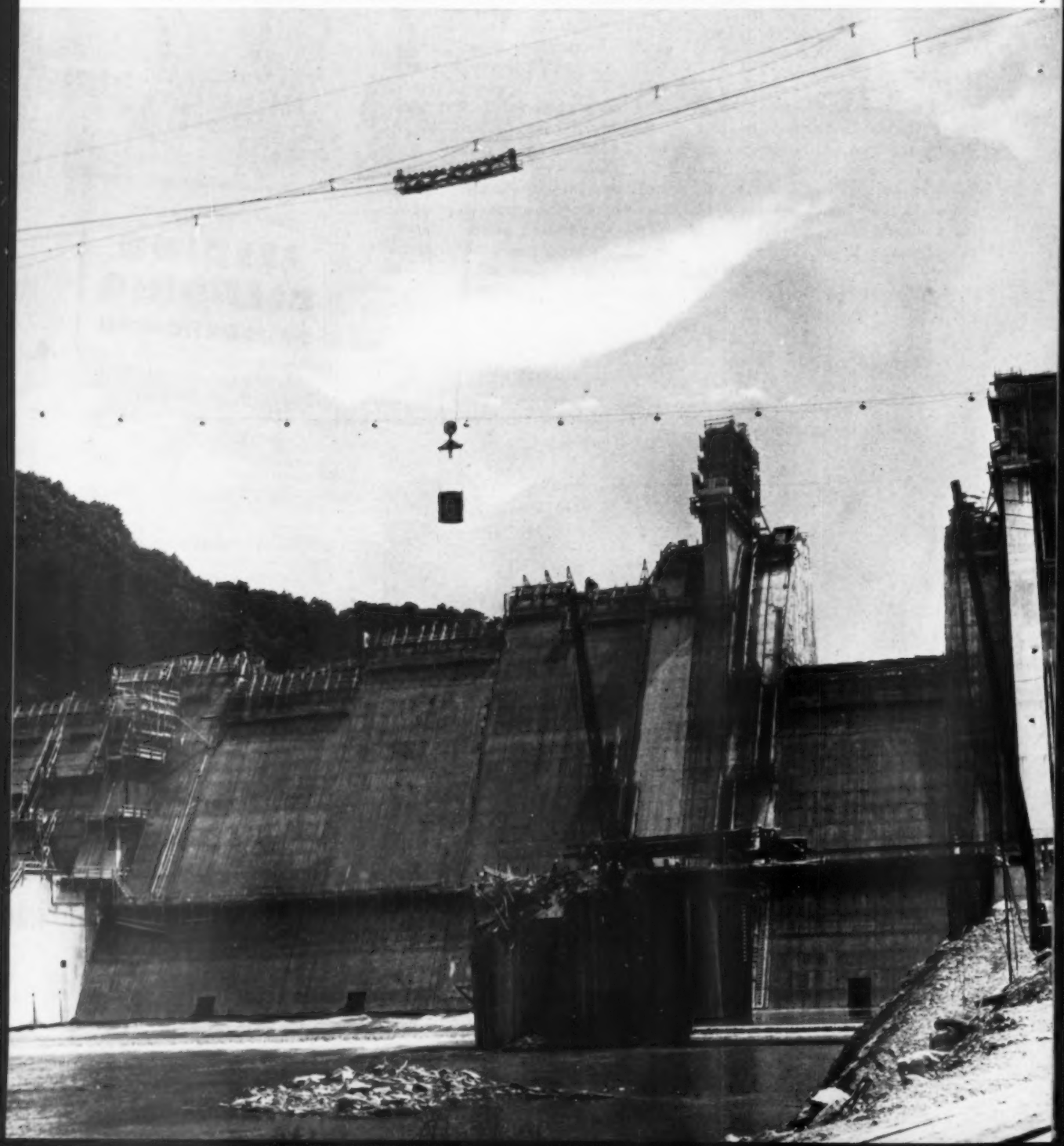
Specialists in instrumentation, control and automation for milling and smelting. Consulting, engineering, design and installation services for all types of system controls.

Enter 71 on card, page 167

USS TIGER BRAND — AMERICA'S NO. 1 WIRE ROPE

607,000 cubic yards of concrete delivered by

SUTTON DAM—One of the largest flood control dams in eastern United States, located on the Elk River about 80 miles from Charleston, West Virginia. Designed and built under the direction of U.S. Army Corps of Engineers, Huntington, West Virginia. Contractors: Joint venture between Arundel, Dixon-Hunkin. General Superintendent for contractors, Jay Hay; Project Engineer, Ed. Hahn.



Enter 72 on card, page 167

"air express" on USS Tiger Brand Tramway Cable

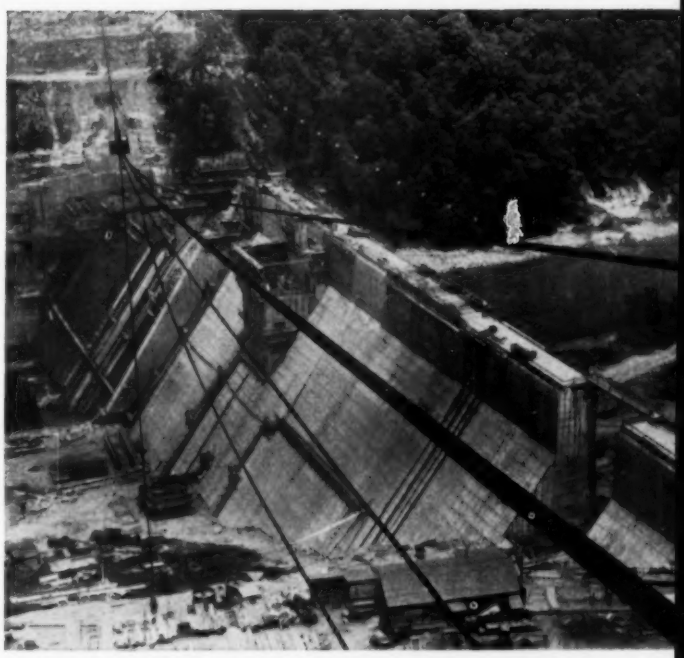
Every 3½ minutes this cableway bucket pours another load of "mud" into the mammoth Sutton Dam near Charleston, West Virginia. They're pouring at the rate of 9,000 cubic yards a week—fast time for one 8-yard bucket. When finished, the dam will contain about 607,000 cubic yards of concrete.

The main "gut" is a Tiger Brand 3-inch Locked Coil Tramway Cable 1,700 feet long. It stretches between one fixed tower and one *moveable* tower so that the bucket can reach any part of the dam. This cable was bought new for the job and from all indications will still be serviceable when the dam is completed. Other Tiger Brand Locked Coil Cables have been used on two or more big dams before replacement was necessary.

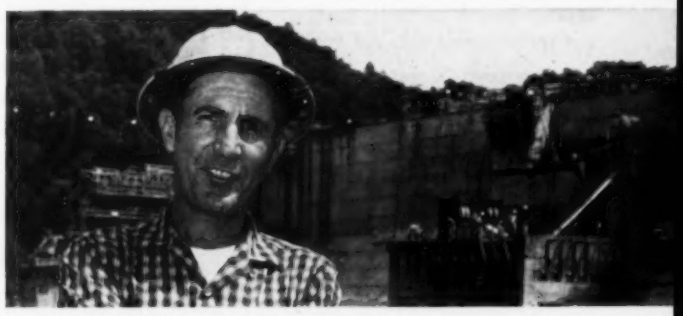
All over this project, Tiger Brand Wire Rope is doing a stupendous job. On one of the more critical applications, a 3,920-foot endless rope is used to pull the carriage assembly. Because of the hard wear this particular rope must take, they used a 1⅛" 6 x 30 flattened strand rope made of tough Monitor Improved Plow Steel.

Tiger Brand Wire Rope was also used for the hoist line, button line and take-up line, largely because of its excellent performance on previous dams such as Mt. Morris and Shasta. Mr. Lamar Pearce, Cableway Superintendent, who has had a world of experience on big dams, uses Tiger Brand more than any other make. For more information on wire rope, write American Steel & Wire, Dept. 9347, 614 Superior Ave., N.W., Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks



Main Gut—USS Tiger Brand 3-inch Locked Coil Cable with smooth surface for efficient operation. Interlocked construction holds each wire in its proper position.



Lamar Pearce, Cableway Superintendent, who knows from experience that Tiger Brand Wire Rope is safe and dependable.

Why Tiger Brand is your best buy

1. It is made by a company that maintains the most complete research and manufacturing facilities in the steel industry.

2. It is designed by one of the country's most capable staffs of wire rope engineers. It is serviced by thoroughly experienced field representatives always ready with their assistance.

3. Every type of Tiger Brand Wire Rope is designed for specific applications. *You* get the *right* rope for the job.

4. It is made by *one* company, U.S. Steel, and every step of production from ore to finished product is carefully controlled and supervised to guarantee *one* high standard of quality.

5. Tiger Brand Wire Rope is manufactured by the foremost single wire rope producer in the country.

Concrete delivered by aerial cableway—the cheapest and fastest way to haul materials needed for the dam.

American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
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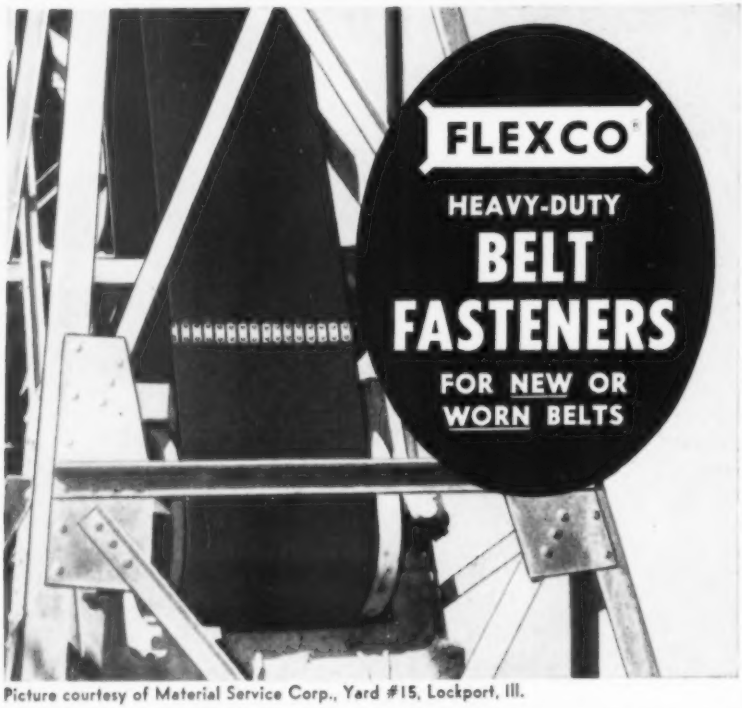
ANOTHER FLEXCO SPLICE DOING A DEPENDABLE JOB AT *MATERIAL SERVICE CORP.*



Picture courtesy of Material Service Corp., Yard #15, Lockport, Ill.

Cutaway of a Flexco application showing compression plates, teeth and precision-made bolts and nuts.

Belt maintenance crews like to work with Flexco fasteners because they are easy to apply — joints last a long time — worn plates can be replaced quickly — ideal for repairing rips and tears.

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS WITH FLEXCO . . . The quality fastener for all heavy-duty conveyor belt applications: SAND & GRAVEL, CRUSHED ROCK, COAL & METALS, CONSTRUCTION EQUIPMENT, etc.

Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

NEW **"25-PAK"**

"25-PAK" contains enough fasteners to join common belt widths.

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Flexible STEEL LACING COMPANY

4623 LEXINGTON STREET • CHICAGO 44, ILLINOIS

Enter 74 on card, page 167

Washington News Letter

(Continued from page 11)

others expect to be faced with a problem the next time they are required to borrow.

The prime interest rate, the rate banks charge their most creditworthy customers, has already gone to 5 percent officially; but by using a small stratagem, the banks are getting a higher rate even from these customers. Frequently, they are also requiring the customer to maintain deposits equal to 20 percent of their loan. Thus, the customer gets the use of only 80 percent of his loan, and on this amount the rate is over 6 percent.

Less favored customers must pay even higher rates. As a result, many projects which once looked good are now in the doubtful category.

Oddly, the consuming of inventories during the steel strike has resulted in postponing the effect of this development. What has happened is that businesses have not been able to replace their used-up inventory, and as a result they have accumulated a good deal of cash. With the settlement of the strike, inventories must be rebuilt; and if the hoped-for expansion in business really occurs, many businesses will have to borrow. The price of money may give the borrowers a rude shock.

The whole question of interest rates and money policy continues to keep Washington experts stirred up. Congress refused to give the President the authority he requested to raise rates on long-term government securities. The legislators were obviously afraid of the political repercussions of increasing the cost of servicing the federal debt.

Some members of Congress are also afraid of the economic repercussions of raising the interest rate on riskless securities. This move would almost certainly force the rate for borrowing, where there is any risk at all, even higher. The consequences in the business community could be serious. If the high cost of borrowing were to postpone many projects, a recession of at least the magnitude of 1958 could certainly recur. A political upset in 1960 might result.

This is the tightrope the financial managers are walking.

Meet tough "Specs" at LOWEST COST!

Remove wood, ochre, chert, lignite, shale, coal, soft and porous stone, and non-plastic type clay from aggregates at the lowest initial and operating cost available, with the Meckum Sand & Gravel Jig.

The Meckum Jigs' high acceptability and performance is proven as the jigged aggregates meet increasingly rigid 'specs' with ease, enabling you to obtain new contracts and greater profits. With amazing simplicity and low cost of operation, Meckum Jigs produce premium quality concrete aggregates for only a few pennies per ton.

More Meckum Sand & Gravel Jigs have been installed, than any other method of removing deleterious materials from aggregate. Don't delay, be prepared. Find out how a Meckum Jig can benefit you.

Upon receipt of a 25 pound representative sample of the material to be jigged, we will make our recommendations based on the lab test results.

Write us for details ➡

MECKUM ENGINEERING, INC.
Dayton Road
Ottawa, Illinois

Please send me full information on the Meckum Sand and Gravel Jig, and how I may meet 'specs' at lowest cost. ☐ I am mailing a 25 pound representative sample for analysis.

NAME_____

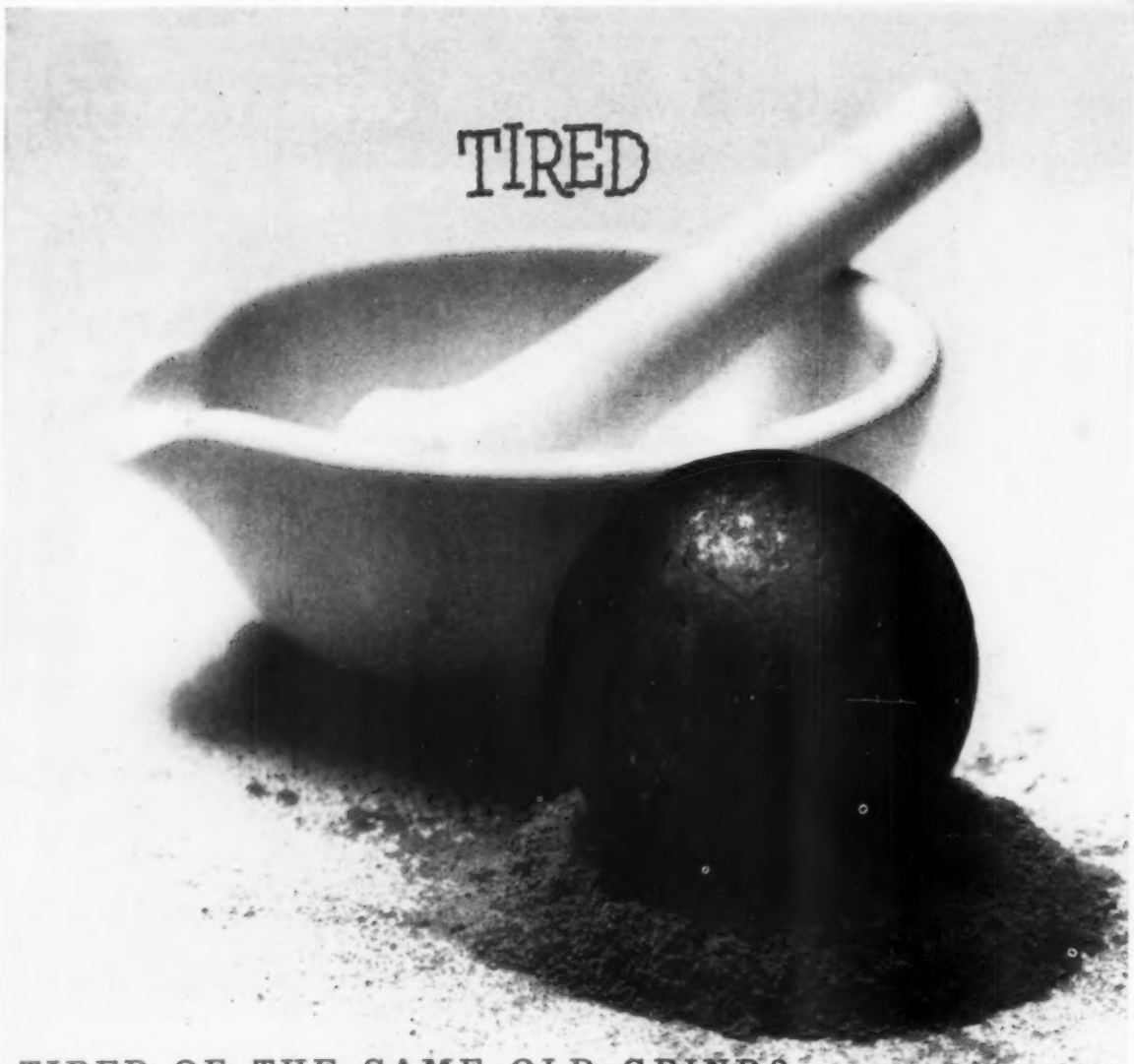
COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

J2 PQ

MECKUM ENGINEERING, INC.
Dayton Road
Ottawa, Illinois
53 W. Jackson Blvd.
Chicago 4, Illinois



TIRED OF THE SAME OLD GRIND?

Do a better job with added efficiency and economy with Coates Triple-Forged Carbex Grinding Balls. Production run tests show that job for job and dollar for dollar, Coates out-performs grinding balls costing many times more.

Coates Grinding Balls grind better, last longer and wear more evenly because they are carefully made of special formula fine-grained, high-carbon steel, checked and calibrated to be more perfectly round . . . scientifically heat treated to the very core, to be tough and rugged.

Call for Coates Triple-Forged Grinding Balls . . . built with care for longer wear.

Write for prices . . . All sizes—½″ to 5″ carried in stock for immediate shipment.

CS59-2

COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

COATES

STEEL PRODUCTS COMPANY

GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

UP TO 50% STRONGER than old-style drums!

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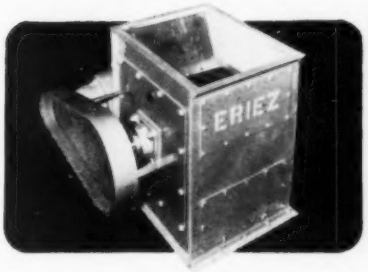
non-electric

MAGNETIC DRUMS



New, expanded line provides more magnetic power, increased protection! For automatic continuous removal of medium fine iron and tramp iron from foods, grains, plastics, rubber, ceramics, etc. Protects machinery, prevents fires and explosions, eliminates product contamination. Quickly, easily installed at discharge end of chutes, spouts, screw conveyors, etc. *Now with replaceable shell and bearings to eliminate costly maintenance problems!*

MAGNETIC POWER GUARANTEED INDEFINITELY — NO LOSS OF MAGNETIC STRENGTH WHEN OPERATED IN HIGH OR LOW TEMPERATORE INSTALLATIONS — Non-electric; no wires, attachments or fuses — No operating or maintenance costs — For wet or dry materials — Self-cleaning — With or without housings — Adjustable magnetic element; easy drum removal — Wide range of models and sizes.

WRITE TODAY FOR DESCRIPTIVE LITERATURE INCLUDING INSTALLATION AND APPLICATION INFORMATION

Eriez Mfg. Co., 113-YA Magnet Dr., Erie, Pa.

ERIEZ

Enter 77-A on card, page 167

Labor Developments

(Continued from page 13)

situation encourages unscrupulous employers to make deals with equally unscrupulous union leaders. In return for recognizing his union, such a leader agrees to very easy contract terms for a relatively long period of years. This automatically prevents any other union, more legitimate and having honest leadership, from attempting to organize the workers through the use of a picket line. In fact, the courts would, under the law, have to protect the first union by enjoining the second.

The third situation listed above provides an even more curious result. Probably to offset the effect of this bar on organizational picketing beyond 30 days, the law includes a provision requiring the National Labor Relations Board to give a picketing union which requests it an election forthwith. Such a case gets top priority.

In view of N.L.R.B.'s record of slowness in handling cases before it, unions which might not otherwise throw an organizational picket line around an establishment are now encouraged by the law *to do just that*. If they use a picket line, they get an immediated election, while the employees' enthusiasm is still high as a result of the organizing campaign. Otherwise they must wait their turn; and during the wait enthusiasm wanes, while employer activities to dissuade the employees from voting for the union have more time to become effective.

Here, again, a provision designed to accomplish a particular result—the reduction of burdensome picket lines—may actually turn out to have the opposite consequence.

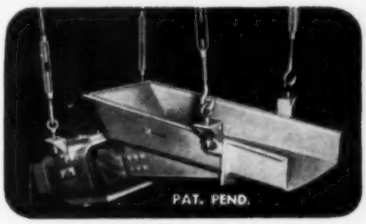
Success of the new glass cloth stack-dust collecting system at Ideal Cement Company's $14,000,000 plant near Albuquerque, N. M., has been indicated by one of the residents of that city when he made a tour of the new mill. After admiring the architecture, he asked his tour guides when the plant would begin production. He was informed that cement production had already been underway for a month.

FEEDER OF THE *future* HERE NOW!

electro-permanent magnetic

ERIEZ

HI-VI VIBRATORY FEEDER



Award-winning feeder . . . features new concepts in design and use of materials. Priced right; provides superior performance; lower operating costs; reduced maintenance and greater production output! For *automatic*, accurate feeding of all types of bulk materials. Variable feed rate from ounces to tons . . . performs spreading, aerating, cooling, proportioning, screening, other operations.

NEW A.C. ELECTRO-PERMANENT MAGNETIC DRIVE PROVIDES GREATER FEEDING CAPACITY • NO RECTIFIER NEEDED • FULLY ENCLOSED POWER ELEMENT PROTECTED AGAINST DUST AND MOISTURE • RUGGED GLASS FIBER SPRINGS REDUCE BREAKAGE • FULLY PROVED IN PLANTS EVERYWHERE

ALSO AVAILABLE: Economical, specially constructed units for hazardous, dusty locations . . . fully acceptable by Mill Mutual.

WRITE FOR BIG VIBRATORY FACT FILE

Eriez Mfg. Co., 113-YB Magnet Dr., Erie, Pa.

ERIEZ

Enter 77-B on card, page 167

NEW FROM DODGE FOR 1960

The thriftiest trucks, in the widest tonnage range, Dodge has ever built . . . including totally new cab-forward models with diesel or gasoline engines.

Name your job. There's a Dodge truck to do it. For Dodge has never had a line-up as great as this new 1960 truck platoon. Spirited panels and pick-ups that deliver up to 200 horsepower. Rugged stakes with up to 19,500 lbs. G.V.W. Husky 4-wheel-drive models with wheelbases from 108″ to 174″. All these and more make Dodge your smartest choice for efficient, low-cost hauling. And in the heavyweight class, Dodge introduces a completely new line of cab-forward models, trucks engineered to put real muscle into your biggest jobs, trucks whose new Servi-Swing fenders open with a simple latch and allow you to walk right up to the engine! See your Dodge dealer. He'll be pleased to give you the full Dodge truck story for 1960.

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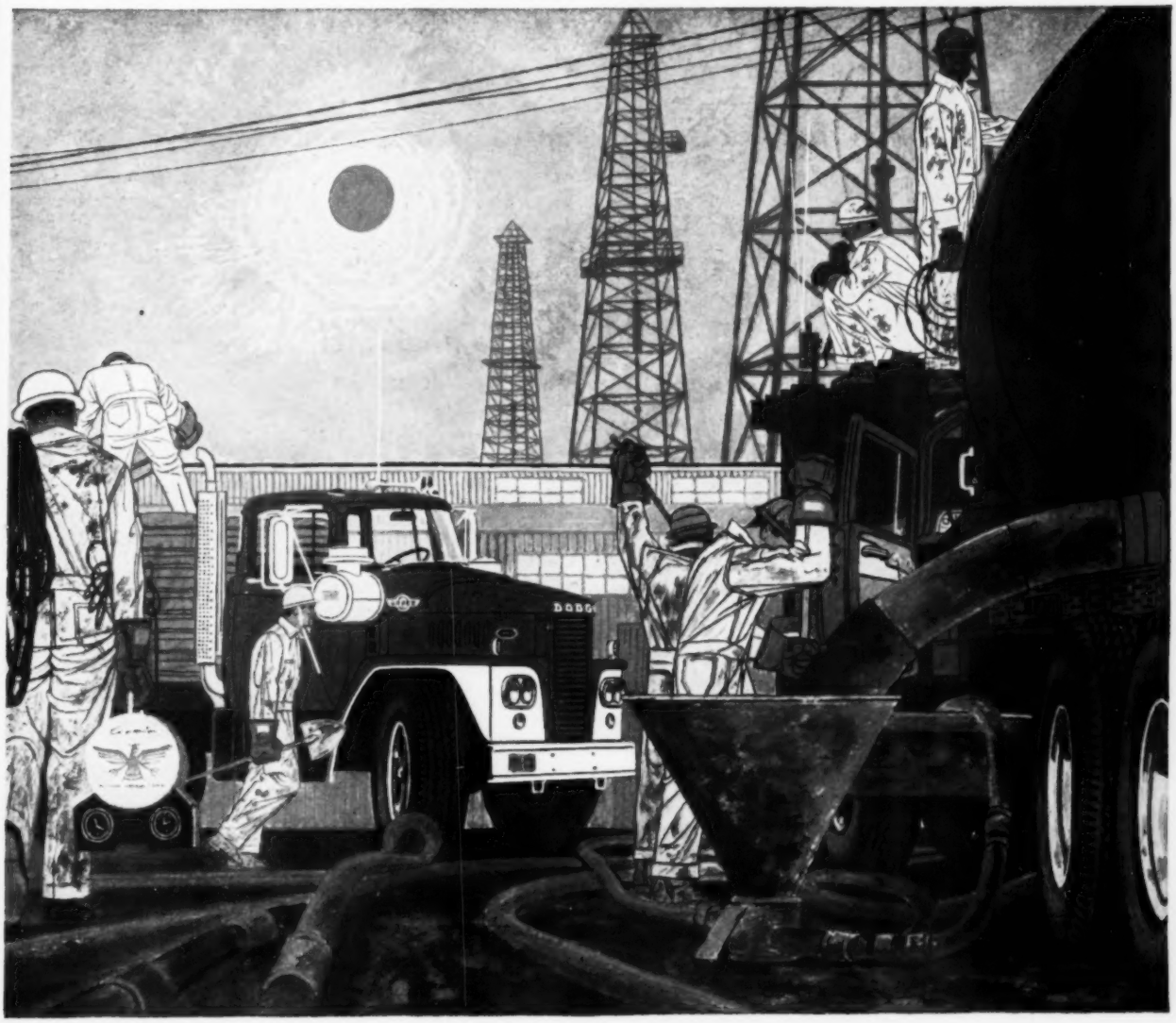
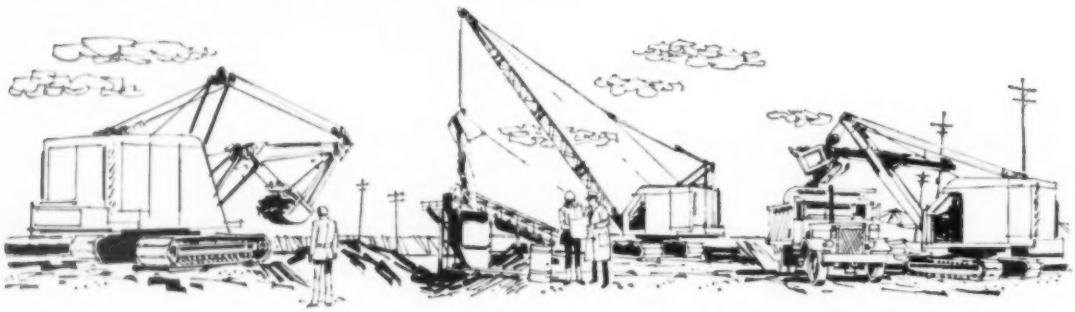


One time-honored fact about ***LINK-BELT SPEEDER*** *shovel-cranes*

Speed-o-Matic controls save

TIME LIGHT CAMERA SHOWS how Link-Belt Speeder operator saves seconds on each cycle, thanks to Speed-o-Matic power hydraulic controls. He doesn't reach, he doesn't tug. Just easy, "key-board" operation. Short-throw levers boost output, conserve operator strength.



You're really on fast time when you clock Speed-o-Matic . . . actually gaining up to 25% more cycles per working shift. You make important production time savings all day long over outdated manual or booster long-throw controls that require extra linkage adjustments . . . that work against the operator, compounding end-of-shift fatigue.

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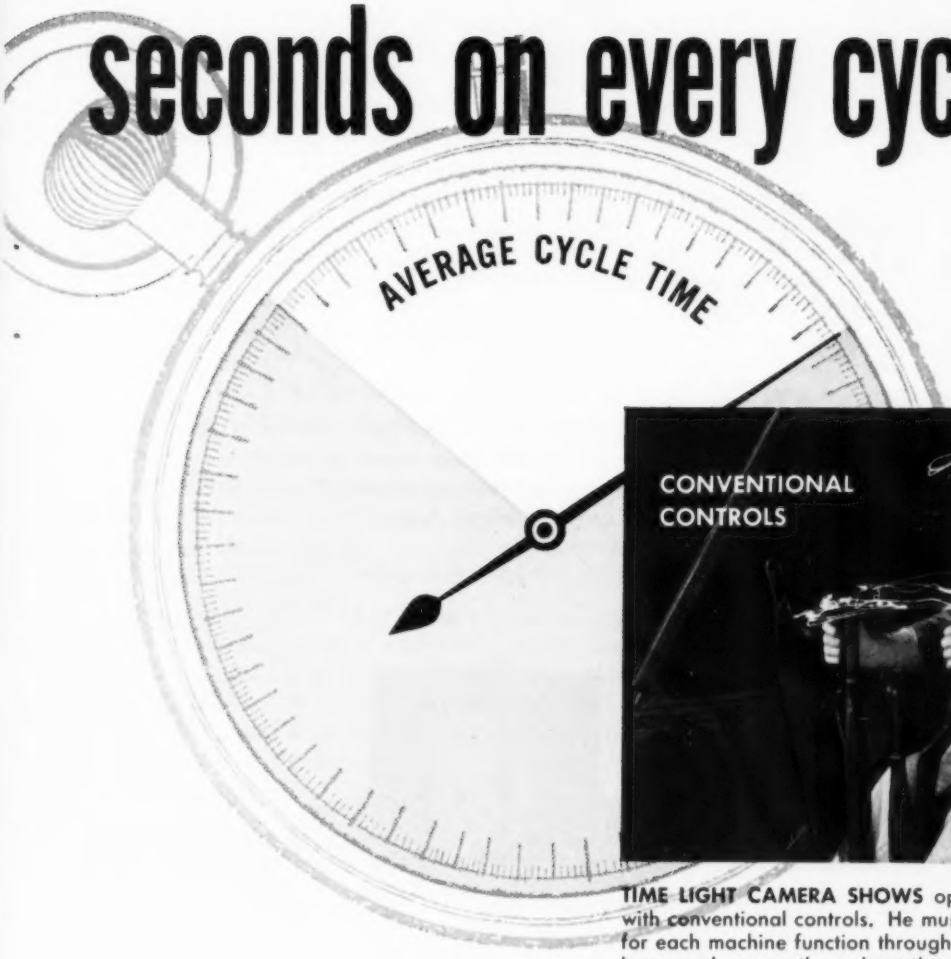
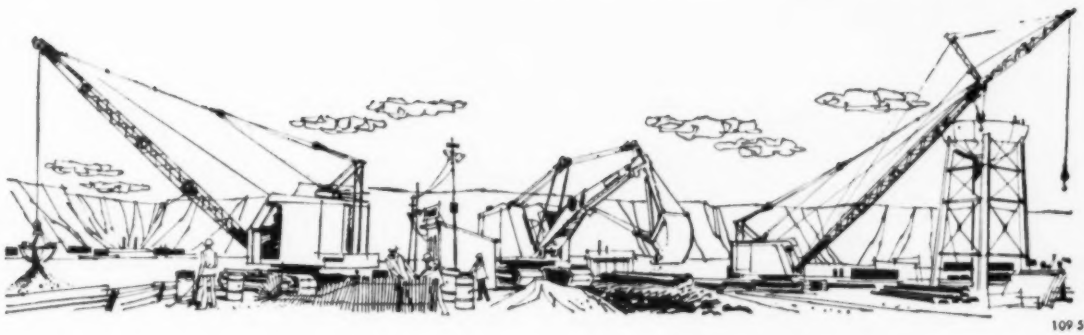
Speed-o-Matic is standard on the Link-Belt Speeder line of performance-plus shovel-cranes. Find out for yourself why these machines have more profit-winning features, *why they produce more.* See your distributor, or write LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa.

seconds on every cycle!



TIME LIGHT CAMERA SHOWS operator caught in the act with conventional controls. He must move long-throw levers for each machine function throughout each cycle. It's these long-reach moves throughout the day that rob him of valuable seconds . . . cut his daily output . . . drain his vitality.



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The Editor's Page

New Labor Reform Act Is Just a Beginning

NOW that a finally-revised labor bill is law, there seems to be a widespread belief that this is a "tough" labor bill and a major victory over corrupt union bosses. Actually, it is nothing of the kind, and business and the public are being warned not to relax their efforts to further restrict unfair labor practices. The new Labor Reform Act of 1959 does impose a number of much-needed controls on the union bosses' methods of operation, but informed opinion holds that it is only a modest beginning in correcting the evils which are extensions of compulsory unionism.

The fact that a predominantly "liberal" Congress passed any kind of labor law at all over strong union opposition demonstrates convincingly the effect which aroused public opinion can have on legislators and public officials. Much harm will result, however, if the public and members of Congress are deceived into believing that this law will put an end to labor racketeering.

THE new labor law is actually a mild one, but it does have some benefits for both management and workers. It gives the union member new legal weapons to fight abuses by his leaders, and it outlaws pressure tactics used against employees by union organizers in trying to sign up a shop. Firms too small to qualify for assistance from the National Labor Relations Board can now have their labor disputes handled by state courts or agencies.

The law also limits the number of reasons for which a firm can be picketed or boycotted and provides other protection for both employees and employers. Some believe that the new law may result in more power for the Government in dealing with union corruption.

UNFORTUNATELY, however, the law strengthens the power of union bosses over their captive memberships in certain vital areas. This power comes from concessions which were made by its supporters in order to assure passage of some sort of reform legislation. According to one authority, these are the major concessions: that it legalizes the return of the infamous closed shop in the construction industry, the system whereby a man must join before he can work; that it gives ex-employees the privilege of voting in union representation elections; and that it allows union bosses to prevent garment makers and construction firms from sub-contracting to non-union firms.

The new law does not put unions under the anti-trust law, outlaw compulsory unionism, make strike violence a federal crime, ban political use of union dues, or outlaw featherbedding or strikes which affect public health and safety.

Senators and representatives who voted for this labor law in the face of strong pressure from the unions deserve the gratitude of everyone concerned. This pressure reportedly included threats of reprisal at the next elections. Labor claimed the credit for electing many of these members of Congress, and they are now marked men who will be faced with the most damaging opposition the unions can muster. When the time comes that they need your support, they should get it; and they should be encouraged to take the further steps necessary to obtain really effective labor legislation.

Walter E. Trauffer

Superior Stone's new Georgia plant rebuilt in four stages with minimum interference to production

Produces 10 sizes at one Up to 25 by blending

Capacity doubled to 1,000 t.p.h.

THE design and construction of a new crushed stone plant which will produce efficiently and economically and have enough flexibility to make a wide variety of sizes and blends is a considerable feat in itself. When this plant is to replace a smaller plant on the same site with the minimum of interference to production it becomes a really noteworthy achievement. This is exactly what was done by the Superior Stone Company at its Dan Quarry on the Savannah River, 5 miles northwest of Augusta, Ga.

The original 500-t.p.h. plant was built in 1951 to supply materials for the U. S. Government's Savannah River H-Bomb plant. As this project neared completion, more and more of the output was sold commercially in the area. This demand became sufficient to justify continuing operation of the plant on a permanent basis. Then the demand was supplemented by expanding highway programs in Georgia and South Carolina and by other government projects. The point was finally reached at which it became advisable to replace the old plant, which was never intended to be permanent, with an essentially new plant of double the capacity (1,000 t.p.h.) of the old one.

The new operation was designed by E. Lee Heidenreich, consulting engineer, and was built by the company's forces with W. B. Shutt in charge of construction. In order to interfere as little as possible with production, this replacement of the old plant was done in three stages; and there is a fourth and final stage which will be added at a later date.

Stage No. 1 was to put a primary crusher, a scalping screen and a raw surge storage in the quarry. This stage, which went into operation in mid-1958, eliminated a long and expensive truck haul from the quarry, a distance of 3,000 ft. having a lift, up steep grades, of 170 ft.

Stage No. 2 consisted of the building of one of two duplicate loading installations, consisting of a concrete reclaiming tunnel and conveyor, a rinsing screen, and car- and truck-loading bins.

Stage No. 3, completed in February, 1959, was the revamping of the main screening and reduction crushing tower. The new all-steel tower was built over and around the old one. Production was halted for only 3 weeks at this time.

Stage No. 4 will consist of a duplicate loading-out tunnel, conveyor, screen, and loading bin, and a few other items.

Features The main feature of this plant is its flexibility, which results in the fact that ten sizes can be made at one time, without blending—ranging from rip rap at the quarry to screenings. Almost any other desired product can be made by blending, without changing any flows or screen or crusher openings. From 20 to 25 different products are usually being made simultaneously for the South Carolina, Georgia, and Florida highway departments, the U. S. Engineers, the Navy Department, and other big uses. All blending is done in the two finished-material reclaiming tunnels, over each of which four straight sizes are stockpiled. About the same number of men is required to operate this plant as at the old one.

This plant is nearly dustless as most of the dry processing and handling is in the quarry below ground level, and the final sizing screens are equipped with water sprays.

Safety is also emphasized. All drives and exposed moving machinery are enclosed by wire guards. Steel guard rails are provided throughout the plant, and steel stairway gives access to every point in the operation.

Quarry The deposit is not the granite common to this section but a quartzite which is a metamorphosed part of the Ordovician sediments, and it is unusually hard and abrasive. It has a Los Angeles Rattler abrasion loss of 13

time--

THE MAIN SCREENING and recrushing tower, with the stockpiling and other conveyors. The first of the two truck- and car-loading bin setups is in the left foreground.

By WALTER E. TRAUFFER

to 18 percent, and meets all specifications. Indicative of the nature of this material is the fact that this plant supplies rock to a large roofing granules manufacturer in Charleston, S. C. This quarry was originally opened in 1940 and was operated on a small scale for many years by the city of Augusta.

Earth and clay overburden varies from 0 to 20 ft. in depth and is removed with shovels and pans. The quarry has three 40-ft. levels, which are quarried selectively only when roofing granules are being produced. Drilling is done with two Gardner-Denver Airtracs with 4-in. bits, and connected to Ingersoll-Rand 600 air compressors, and holes are spaced 12 by 14 ft.

DuPont Red Cross 60 and Pelletal No. 1 are used. Ammonium nitrate is also used in dry weather. Holes are loaded with the two types of explosive alternated. A cap is used in the bottom of each hole. There are 9 delays, and a shot usually consists of 8 to 12 lines and about 60 holes. A CD48 blasting machine is used.

Good breakage is obtained and the small amount of secondary breakage necessary is done with a dropball about one day in each month. A 10,000-lb. Georgia-Eagle ball is dropped about 40 ft. by a Northwest No. 6 crane with a 60-ft. boom. A LeTourneau-Westinghouse Tournadozer is used for

A GENERAL PLANT VIEW from the quarry. In the right foreground is the scalping and secondary crushing tower. Next (left) is the raw surge stockpile, with the reclaiming tunnel and conveyor. In the right background are the main screening tower and the loading bins.

stockpiling and cleanup work in the quarry.

Loading of the stone is done by two 2½-cu. yd. Northwest 80D diesel shovels, on one or two levels. Euclid 12-cu. yd. rear-dump diesel trucks haul to the primary crusher, from 6 to 9 being used, depending on the length of haul, which may range up to 500 ft. The trucks haul up an incline to a level 40 ft. above the quarry floor.

Primary Crushing The trucks discharge into an 18- by 22-ft. hopper which can accommodate three trucks at one time over a 48-in. by 14-ft. 3-in. Telsmith apron feeder. The latter provides a steady flow to the bar grizzly ahead of the 42- by 48-in. Lippman Grizzly King primary jaw crusher. The jaw is driven by a 250-hp., 2,300-v. motor and is set at 6- to 8-in. maximum opening.

Scalping Following the primary unit, rock is carried on a 48-in. belt conveyor (AA) to the top of screen tower No. 1. There it is discharged through a split chute onto either (usually both) of two Tyler Ty-Rock 2-deck screens, one a 5- by 12-ft. unit and the other a 6- by 14-ft. These are equipped with 5-in. ribbed coat manganese plate on the top deck and 2¼-in. clear opening manganese plate on the bottom deck. Either screen and its crusher can be operated alone or independently of the other.

Oversize from either or both screens (5- to 12-in.) can go *via* belt conveyor BB to a 100-ton truck-loading bin as rip rap. When the bin is full, the flow is diverted from conveyor BB to conveyor BB_1, from which it is discharged to a stockpile.

A possible future installation for direct loading out of minus 2½-in. crusher run material would consist of a belt conveyor (CC), a truck-loading bin, and a ground stockpile.

Secondary Crushing The 5- to 12-in. oversize can also go with the 2- to 5-in. material off the bottom decks of both screens to a pair of secondary crushers. Material from the 5- by 12-ft. screen goes to a 4¼-ft. Symons standard cone crusher. That from the 6- by 14-ft. screen goes to a 5½-ft. Symons standard cone crusher. Both are set at 2¾-in. maximum opening. The minus 2-in. material through both bottom decks can also go these crushers when extra small sizes are desired.

Normally the minus 2¾-in. crusher product and the minus 2-in. screen throughs are carried on conveyor DD out of the quarry to the top of transfer tower No. 2. There a 3-way diverter gate, electrically remote-controlled from screening tower No. 2, can send all or part of this material to a raw reserve storage pile, or all or a part of it direct to final screening tower No. 2. A third flow would be to a future screen with conveyor (ROC) and bin and stockpile for loading to cars or trucks as crusher-run rock.

Raw Surge Storage In the storage flow the 3-way diverter discharges the minus 2¾-in. rock on stockpiling conveyor EE. The oversize from the future crusher-run rock screen would also go on this conveyor. The material is discharged from a height of 130 ft. to a 54,000-ton surge stockpile over a concrete reclaiming tunnel (FF). About 20,000 tons of this storage is reclaimable without rehandling through four openings in the top of the 200-ft. tunnel, one of which is equipped with a 56F Syntron electric vibrating feeder and the other three with gravity gates. This material is reclaimed onto belt conveyor FF, which is inclined from the end of the tunnel to transfer tower No. 1. There it is discharged through a hopper onto conveyor DD back to transfer tower No. 2 and thence to main screening tower No. 2.

Another possible future installation is a conveyor GG to return this minus 2¾-in. material from transfer tower No. 1 to screening tower No. 1 for reduction to smaller sizes.

Coarse Screening The usual flow from transfer tower No. 2 is the direct one, *via* belt conveyor HH, to screening tower No. 2. Here a split chute splits the flow equally to the first of three pairs of vibrating screens in independent series. Four finished sizes from each series go to stockpiles over reclaiming tunnels. The crusher

THIS VIEW into the quarry shows the two working faces in the far background. Primary and secondary crushing stations are shown.

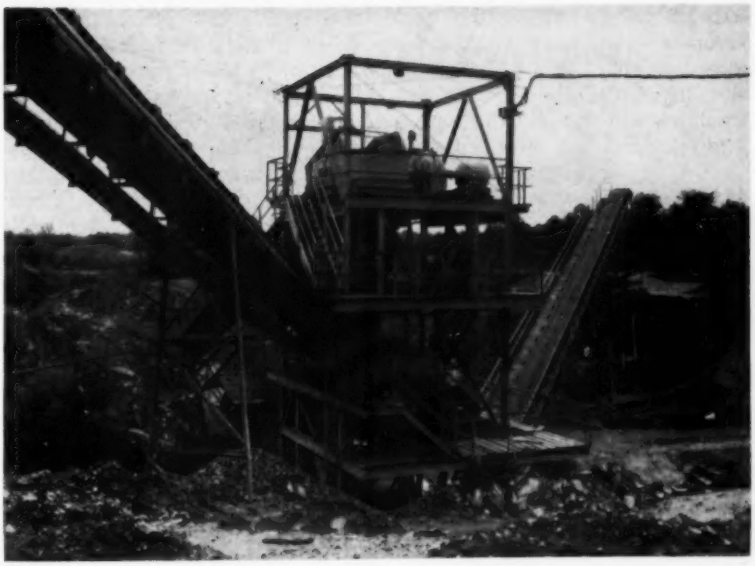
products are conveyed to a surge pile over another tunnel, from which they are returned to the screening circuits at the second screens. When desired, either of these two screening and crushing circuits can be operated alone.

In the following description of the flow the two series of screens and crushers will be referred to as the left and right series. The first pair of screens (No. 1) are 6- by 14-ft. 3-deck Tyler Ty-Rock machines. The left screen is normally equipped with 2¼-, 1¾-, and 1¼-in. wire cloth, and the right screen has 1¾-, 1¼-, and ⅞-in. cloth.

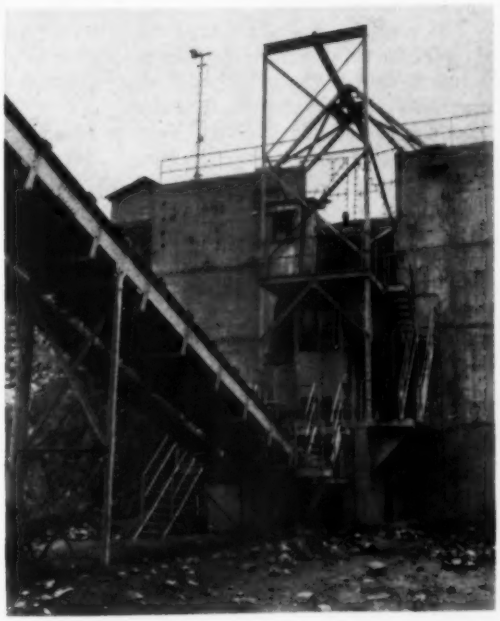
Recrushing The 2¼-in. plus oversize off the top deck of the left screen is normally chuted to a 4-ft. Nordberg Symons shorthead cone crusher, and the 1¾-in. plus oversize from the right screen to a 5½-ft. Symons short-head cone. When the sizes being made are less than 2¼ in., the 2¼- to 1¾-in. material off the second deck of the left screen can also go to the 4-ft. cone. In case the 4-ft. short-head cone crusher is overloaded, a crossover chute can take the overload over to the 5½- ft. short-head cone.

When the maximum size is less than 1¾ in., the 1¾- to 1¼-in. material off the second deck of the right screen and any over the 1¼-in. top deck of the left No. 2 screen can also go to this crusher. Both crushers are ordinarily set at 1¼-in. maximum opening.

The crusher products are carried,

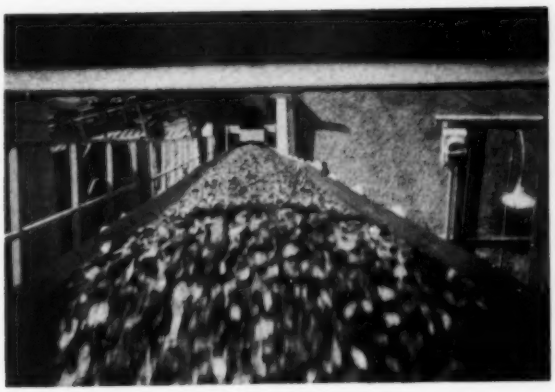


THE TRANSFER TOWER at the edge of the quarry, with the boom conveyor to the raw surge stockpile in the quarry (right).



A VIEW of the 42- by 48-in. jaw primary crusher, with the hopper and apron feeder above. The 48-in. belt conveyor goes to the scalping and secondary crushing station in the quarry.

LEFT: One of the coarse sizing screens. RIGHT: One of the many belt conveyors.



respectively, on stockpiling conveyors C and K to a 1,000-ton surge stockpile. An F55 Syntron vibrating feeder reclaims this material to conveyor B, which feeds it to the No. 2 pair of screens.

Medium Screening Normally the 2¼- to 1¾-in. material off the second deck of the left No. 1 screen is discharged on horizontal transfer conveyor PP to stockpiling conveyor D, which discharges it to the first 250-ton pile over the old left reclaiming tunnel (H).

The 1¾- to 1¼-in. material off the bottom deck of the left No. 1 screen and the second deck of the right screen is carried on transfer conveyor QQ to stockpiling conveyor LL and to the first 500-ton pile over the new right reclaiming tunnel (MM).

The 1¼- to ⅞-in. material off the bottom deck of the right No. 1 screen is chuted to stockpiling conveyor KK. This discharges it to the second 500-ton pile over the right reclaiming tunnel.

The second (No. 2) pair of screens are 6- by 14-ft. Tyler 3-deck machines. The left screen has 1¼-, ⅝-, and ⅛-in. and the right one 1¼-, ⅞-, and ⅛-in. wirecloth. The left screen receives the minus 1¼-in. material through the bottom deck of its No. 1 screen. The right screen receives the minus ⅞-in. material through the bottom deck of its No. 1 screen. Either or both can also receive minus 1¼-in. material from the tertiary crusher stockpile *via* tunnel reclaiming conveyor B which inclines to discharge to them *via* a split chute. This conveyor is constantly in operation to supply a steady flow back into the stream.

The 1¼- to ⅝-in. No. 57 rock off the second deck of the left No. 2 screen is discharged by conveyor E to the second pile over the old left reclaiming tunnel.

Fines Disposal Material through the ⅛-in. bottom decks of both No. 2 screens is sand and is flumed to a tank feeding a 6- by 8-in. Georgia Iron Works centrifugal sand pump. This discharges it into a settling basin from which it is reclaimed by a crane for asphalt filler, etc. Water overflows into a worked-out section of the quarry.

Fine Screening The ⅝- to ⅛-in. material off the bottom deck of the left No. 2 screen goes to the left one of the two 4- by 12-ft. Nordberg Symons 2-deck No. 3 screens. This has ¼-in. and No. 5190 cloth. The ⅝- to ¼-in. material off the top deck of this screen goes *via* conveyor G to the fourth pile over the left tunnel. The ⅜- to 1/16- in. material over the second deck goes *via* conveyor F to the third stockpile.

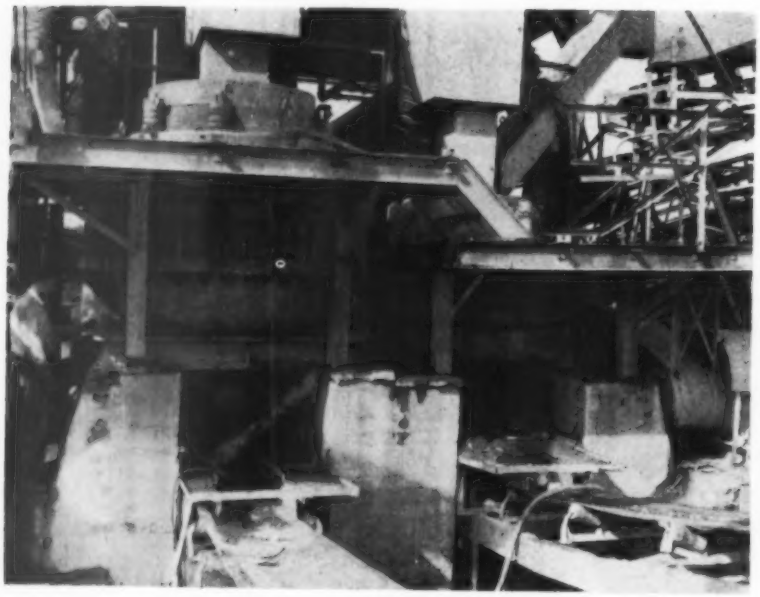
On the right side the ⅞- to ⅛-in. material over the bottom deck of screen No. 2 goes to the No. 3 screen. This has ½-in. and No. 5190 openings. The ⅞- to ½-in. material off its top deck is carried on conveyor JJ to the third pile over the right tunnel. The ½- to ⅛-in. material over the bottom deck goes *via* conveyor II to the fourth of the four stockpiles over the right tunnel.

The minus ⅛-in. sand through the bottom decks of both No. 3 screens also goes to the sand pump.

Finished Storage and Loading The right tunnel (MM) is of reinforced concrete construction and is 285 ft. long. Each of the four stockpiles over it has a live storage capacity of 500 tons reclaimable through two openings with electric vibrating feeders—one Jeffrey and one Syntron. Reclaiming belt conveyor MM feeds single sizes or any desired blend to a 6- by 14-ft. Ty-Rock 2-deck rinsing screen over a set of loading bins. This screen is fitted with ¾-in. manganese punched plate and ⅛-in. wirecloth and water sprays. The washed material off both decks is discharged into any of four 150-ton steel car and truck loading bins by reversible shuttle conveyor. Cars are loaded under the bins, and trucks can be loaded at the same time through side chutes.

The old left tunnel H is of steel construction. This tunnel, with the old conveyors feeding to it, will be replaced by a duplicate of the right-hand installation. Each of the four stockpiles over it has a live storage capacity of only 250 tons, reclaimable through individual single openings with gravity gates. Reclaiming belt conveyor H discharges *via* a split chute to a 5- by 8-ft. Telsmith 2-deck rinsing screen, then *via* belt conveyor J to three old 75-ton steel truck-loading bins.

For car loading the split chute



THE TWO short head cone final reduction crushers (one 5½-ft. and one 4-ft.) which reduce stone to 1¼ in. and under.

can also discharge this material from conveyor H to cross conveyor NN, which discharges onto the rinsing screen over the four new 150-ton bins serving tunnel MM. This arrangement is a temporary expedient and will be abandoned when the new tunnel H installation is completed, including a duplicate rinsing screen, a shuttle conveyor, and bin installation. The fines through both rinsing screens go to the sand pump previously described.

Excess of any size of material can be stockpiled from the bins by trucks. Reloading into trucks and cars is done by a 2-cu. yd. Hough Payloader and cranes.

Control The entire plant is push-button-controlled from three central stations. From screening tower No. 1 everything that can be seen from there is controlled, from the primary crusher feeder to transfer tower No. 2 and the plant feed reserve storage pile. The operator at the top of screening tower No. 2 can see and control everything from this pile on through to the final tunnel storage piles. Blending and loading out of the finished products is controlled from on top of the car-loading bins. Interlocks insure automatic sequence stopping from any point, in case of a breakdown. The electrical system was designed by Maurice B. Cook, consulting engineer.

Other All of the six screens in the main No. 2 screening tower and the two rinsing screens are equipped with Spraying Systems Company flat washing sprays. Wash water is pumped from the Savannah River about 300 ft. and against a high head. Four 3-in. Ingersoll-Rand pumps (with a fifth in reserve) pump through an 8-in. line, supplemented by an 8-in. booster pump in the pumphouse.

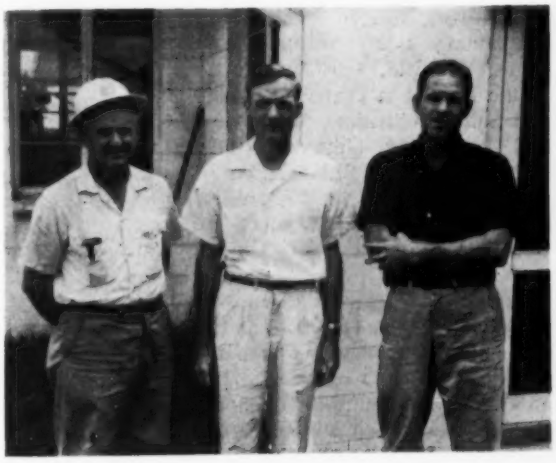
Electric power is purchased from the Georgia Power Company and reduced at the site from 44,000 v. to 2,300 v. This voltage is used for the crusher motors and for any other motors of 150 hp. or over. Three company substations reduce to 220-v. for all other motors.

The idlers, pulleys, and takeups of the new belt conveyors in this plant are Stephens-Adamson with

(Continued on page 95)

THE FOUR new 150-ton bins now used for car and truck loading from both stockpile tunnels. A second identical installation is planned.

ANOTHER VIEW of the final screening tower, which shows the two duplicate material flows.



LEFT to right: Ralph Shuping, general superintendent; Harry Miller, sales manager; and W. T. Hill, office manager.

1958 Safety Competition Winners Announced by National Slag Assn.

THE TENTH annual Safety Competition, sponsored by the National Slag Association and conducted by the U. S. Bureau of Mines, has awarded top safety honors to the Foamed-Slag plant of the Bethlehem Steel Company, at Sparrows Point, Md., and to the Detroit Hard-Slag Plant No. 1 of the Edward C. Levy Company at Detroit, Mich.

Bronze plaques, provided by PIT AND QUARRY, will be awarded these plants for attaining the best safety records in the two groups of slag plants into which the competition is divided. The Bureau of Mines also presented a Certificate of Achievement in Safety to the plants for having operated throughout the 1958 slag year without a lost-time disabling work injury. In addition, the Bureau presented a Certificate of Accomplishment in Safety to each employee and official of the winning companies.

Group A—Plants Operated 60,000 Man-Hours or More—For the second time in five years of injury-free participation, Bethlehem's Foamed-Slag plant was the trophy winner in the Class A or large-plant group. The Foamed-Slag plant won top honors in 1954 and honorable mention in 1955, 1956, and 1957. During the five years, this plant has operated 553,132 man-hours without a lost-time disabling work injury. "This is an outstanding safety record," said James Westfield, assistant director of the Bureau in charge of Health and Safety Activities. "Employees and supervisors alike deservedly share in this accomplishment."

Six other plants in this area of the competition also had injury-free operations.

Group B—Plants Operated Less Than 60,000 Man-Hours—The Detroit Hard-Slag Plant No. 1 of the Edward C. Levy Company at Detroit, Wayne County, Mich., with the best safety record in the small-plant group, received its first PIT AND QUARRY plaque for highest honors in this group. This plant was operated 54,008 man-hours of exposure to the hazards of the industry without a lost-time disabling work injury. Having first participated in the 1954 competition, it was operated 302,320 man-hours during this five-year period with only four lost-time disabling work injuries causing 418 days of disability. The plant was a strong competitor in the 1956 contest.

In the small-plant group, 21 other installations operated during the 1958 slag-year without a lost-time disabling work injury. The Detroit Hard-Slag Plant No. 1, however, won because it worked the greatest number of man-hours among the injury-free contestants.

Injury - Free Operations — The 1958 slag competition saw 29 of the 48 competing plants operated on an injury-free basis. They worked a total of 1,243,266 man-hours. These injury-free man-hours accounted for 39.7 percent of the total hours worked at the 48 competing operations.

Twenty-one plants, excluding the trophy winners, won Certificates of Achievement in Safety, and each employee and official of each plant received a Certificate of Accomplishment in Safety. These awards were made by the Bureau of Mines. All operated 20,000 man-hours or more without a lost-time disabling work injury. Six other plants with injury-free records did not qualify for certificate awards because they operated less than the required 20,000 man-hours.

The following plants are the 21 certificate winners:

Mingo Junction Plant, The Standard Slag Co., Mingo Junction, Ohio—98,759 man-hours

Corrigan-McKinney Plant, The Standard Slag Co., Cleveland, Ohio—90,995 man-hours

Bethlehem Plant, Bethlehem Steel Co., Bethlehem, Pa.—86,326 man-hours.

Dock 8 Plant, The Standard Slag Co., Cleveland, Ohio—78,490 man-hours

Harriet No. 3 Plant, Buffalo Slag Co., Inc., Tonawanda, N. Y. — 75,344 man-hours

South Deering Plant, Illinois Slag and Ballast Co., Chicago, Ill. — 70,657 man-hours

Sharpsville Plant, Cambria Slag Co., Sharpsville, Pa.—52,287 man-hours

Ashland Plant, The Standard Slag Co., Ashland, Ky.—44,126 man-hours

Aliquippa Plant, Duquesne Slag Products Co., Aliquippa, Pa. — 39,731 man-hours

Ensley Lightweight and Converter Plant, Birmingham Slag Div., Vulcan Materials Co., Birmingham, Ala.—37,896 man-hours

Midland Plant, The Midland Slag Co., Midland, Pa.—37,163 man-hours

Birmingham Slag Plant, U. S. Pipe and Foundry Co., Birmingham, Ala.—37,044 man-hours

Portsmouth Plant, The Standard Slag Co., New Boston, Ohio — 36,637 man-hours

Woodward Plant, Birmingham Slag Div., Vulcan Materials Co., Bessemer, Ala.—35,909 man-hours

Monessen Plant, Duquesne Slag Products Co., Belle Vernon, Pa.—34,829 man-hours

Erie No. 5 Plant, Buffalo Slag Co., Inc., Erie, Pa.—30,880 man-hours

Sheridan Slag Plant, Sheridan Slag Co., Sheridan, Pa.—29,344 man-hours

Toledo Slag Plant, The France Stone Co., Toledo, Ohio—28,870 man-hours

Lordstown Plant, The Standard Slag Co., Lordstown, Ohio—23,781 man-hours

Thomas Plant, Birmingham Slag Div., Vulcan Materials Co., Birmingham, Ala. —20,271 man-hours

South Chicago Plant, N. D. Connelly Interests, South Chicago, Ill. — 20,071 man-hours

Injury Experience—The overall injury experience of the 48 competing plants in the 1958 National Slag Association Safety Competition revealed that the injury-frequency of 13.733 was 66 percent higher than 8.266 of 1957, but was 16 percent lower than the 10-year overall frequency rate of 16.393. The injury-severity rate of 3,963.216 for 1958 was 70 percent higher than the 2,329.544 for 1957, but was 16 percent lower than the ten-year average severity of 4,730.141.

Excellent Safety Record Of Canada Cement Co. Lauded at Anniversary

On August 20, 1959, Canada Cement Company Limited celebrated the 50th anniversary of the founding of this firm. To commemorate this event, ceremonies were held at the Hull, Que., plant, which had operated (up to August 20) for 5,266 days, or nearly 14½ years, without a single industrial accident. This is a record unequalled in the portland cement industry of North America.

Present at the celebration were J. M. Breen, president and general manager, J. D. Johnson, chairman of the board, and other senior officials of the company. Others attending the ceremonies included the entire staff of the plant, representatives of the portland cement industry in the United States, and federal, provincial, and municipal officials.

George E. Warren, president of Southwestern Portland Cement Company, Los Angeles, rededicated the Portland Cement Association trophy—a 6-ft. high concrete monument—which he first presented to the plant 23 years ago. The trophy was accepted by J. M. Breen, president of Canada Cement. It was unveiled by L. Tremblay, a millwright, whose 50-year record of service makes him the oldest employee at the plant.

Donald Kennedy, president of the Portland Cement Association, Chicago, was the principal speaker. Others who delivered addresses included the following: J. D. Johnson, board president; I. F. LeGore, safety director, P.C.A.; Victor C. Hamilton, general manager, operations; and government and municipal officials.

T. T. Truesdell, superintendent of the Hull plant, served as chairman of the anniversary meeting. D. A. Gasper, who recently retired as the superintendent of the plant, also participated in the ceremonies.

It was pointed out by several speakers that whereas the cement industry had an unfavorable safety record in early years, its standing at present is excellent. Credit was given to the efforts of the Portland Cement Association, which has long promoted plant safety and instituted the presentation of awards to member companies completing a year without a disabling accident—a record unheard of before 1925.

Standing beside the P.C.A. safety trophy which was rededicated at the 50th anniversary ceremonies of Canada Cement Company at Hull, Que., left to right: J. M. Breen, Canada Cement president and general manager; T. T. Truesdell, superintendent of the Hull plant; D. A. Gasper, retired Hull superintendent; and J. D. Johnson, board chairman of the company.

In that year the first two awards were made. They were presented to the Port Colborne, Ont., plant of Canada Cement, and to the Duluth, Minn., plant of Universal Atlas Cement Division of United States Steel Corporation.

In addition to its fine safety record, the Hull plant has another claim to distinction in the history of the cement industry. The Canadian cement industry was launched at Hull between 1830 and 1840, when Ruggles Wright began the manufacture of natural cement from magnesian limestone obtained from the Ontario shore of the Ottawa River. A cement plant owned by the Wright family at Hull was one of those that in 1909 amalgamated to form the Canada Cement Company. The latter now operates nine plants in various areas of Canada and reportedly produces about two-thirds of the portland cement made in Canada.

Pulp Mill Reclaiming Process Reveals Quantity Lime Source

The new facilities at Buckeye Cellulose Corporation's pulp and paper mill, Foley, Fla., are self-sufficient as far as lime is concerned due to recalcination of both the causticizing sludge and the water treatment sludge. Prior to the recent expansion, the sludge from the cold lime water softening plant was considered unusable due to high magnesium compounds present (3 to 6 percent).

The new operation overcomes this problem by carbonating the sludge with stack gas from the lime kilns, thereby dissolving the magnesium compounds. The sludge is then dewatered in a Bird centrifugal filter and fed to the kilns along with lime mud from the causticizing operations.

According to *Paper Trade Journal*, the lime yield is of sufficient quantity and quality to replace about 50 tons per day of commercial lime.

The National Safety Council has issued a new, 96-page illustrated booklet entitled *Showmanship in Safety*, which contains ideas for stunts, demonstrations, and promotions that will "bring a change of pace and a dash of color into your safety efforts." Quantity prices may be obtained from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Calcium Products Division—

By BUREN C. HEROD

ANOTHER ON THE SPOT REPORT

AN UNUSUALLY wide range of products, and an even wider range of product application are two outstanding characteristics of the operations and marketing of the Calcium Products Division of the Georgia Marble Company, Tate, Ga. In the approximately 12 years since the division was organized, production has been expanded and diversified to the point where about 40 products currently come off the processing lines—finished materials that are used in virtually a complete alphabet of industrial fields ranging from fine abrasives to welding rods.

Above: Calcium Products Division obtains its raw material through selective quarrying in an underground operation. A room-and-pillar system has been established, and broken rock is loaded out for truck haulage by diesel shovels.

Right: A downhill view from the truck dump hopper, with a part of the primary crusher house in view at the left, the concrete stave storage silos just beyond, and the plant buildings at the lower level.

Supplier to Modern Industry

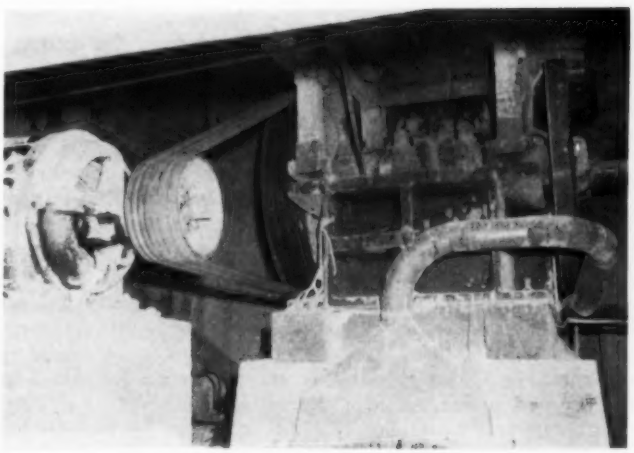
far-flung markets consume diversified production of southern operations

The relatively short history of Calcium Products Division has witnessed a growth resulting in the development of a facility that is actually four plants in one, involving crushing, screening, and both wet and dry grinding. In the last decade, market demand for the exceptionally high-quality materials produced by this firm has necessitated various expansion programs in which units were added to the wet- and dry-grinding lines, and most recently an improvement in primary crushing of plant feed.

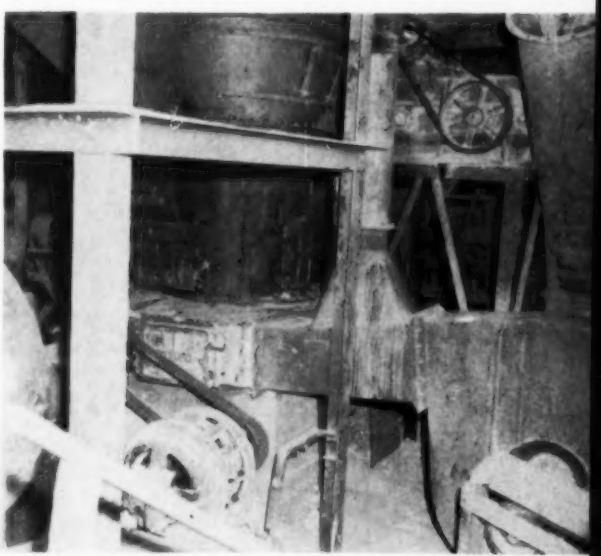
Although organized by the parent firm for the development, production, and sales of crushed and ground marble products, the division operates as a separate entity. In view of product quality goals, it quickly became evident that reject dimension stone material would not consistently provide the calcium carbonate content, cleanness, whiteness, and dryness desired by Calcium Products for its materials.

Therefore, the latter obtains raw material by selectively quarrying in its own underground operations—near the open quarries of the parent firm—and in no way incorporates by-product processing. The marble formation in which these operations are situated has been long famous for the pure crystalline material extracted from it—material that presents the same striking characteristics as those found in the storied Taj Mahal.

Some very definite advantages are inherent in the method used for mining the formation. By going underground, operations are un-



This recently-installed primary jaw crusher reduces quarry-run material through a 2-in. setting. Note the dust collection hood and duct work at the discharge area.



In one of the processing lines, two of these mills are used for further reduction of some sizes in excess of shipping requirements.

Wet-grinding operations involve a battery of granite-lined mills in circuit with flotation equipment and centrifugal classifiers. The finest materials — averaging 2½ microns — are produced in this system.

affected by weather; there is no need for stripping; the rock is removed in its naturally clean state, with no accompanying soil; and there is no moisture problem with the plant feed.

The room-and-pillar system is followed from drifts into the side of a hill. (This property is situated in the southernmost section of the Blue Ridge Mountains.) In establishing 40-ft. rooms and 40-ft. pillars, headings are advanced with a face about 20 ft. high. Advance averages about 12 ft. per round with 60-hole, 2,-series wedge cuts. The 1⅝-in. holes for the heading pattern are drilled with two truck-mounted, hydraulically remote-controlled Joy jumbos, and are charged with Hercules Gelamite. Detonation is accomplished with millisecond caps, and the rounds are fired at the end of the shift.

Broken rock—about 1,200 t.p.d. —is loaded out by ¾-cu. yd. Bucyrus Erie 22-B shovels, and is hauled to the primary crushing installation in 18-ton rear-dump Euclid trucks. In the earlier operations, smaller crushers had been provided to supply the various individual processing departments, or plants. In one operation, these were replaced with the present 24 x 36 type H Traylor jaw crusher. Driven by a 125-hp. 2,300-v. motor, this unit reduces the quarry-run material through a 2-in. setting.

Discharge is received on a 36-in. by 81-ft. conveyor the first section of which is equipped with Chain Belt picking idlers. Only an insignificant fraction of the feed has to be hand-picked and rejected at this point. Since the crusher was installed at nearly the same elevation as the haulage road from the quarry, the conveyor above is horizontal and discharges into concrete surge silos a short distance farther downhill.

As the stone from a specific area is delivered to the primary and crushed, it is transferred to the appropriate one of the two surge silos. One of these, with 400-ton recoverable storage, supplies two of the processing lines directly; the other, an 800-ton unit, supplies a third department. Stone is recovered from the surge silos *via* Jeffrey vibrating feeders and delivered to a 24-in. by 223-ft. conveyor for transfer to the processing lines.

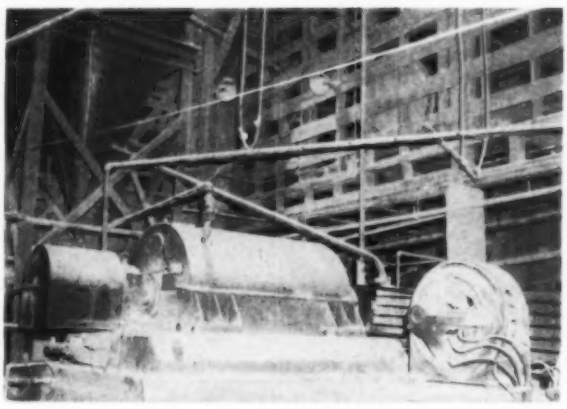
For purposes of simplified processing description, the dry-grinding and screening phases will be discussed first. In the first step preceding the final separation of screened products, the primary crusher-run material is passed over a 4- by 8-ft. Allis-Chalmers Aero-Vibe screen on which plus ½-in. feed is scalped for delivery to a gyratory secondary crusher.

Discharge from the latter, plus scalper throughs, are raised in a bucket elevator to a battery of 4- by 8-ft. and 4- by 10-ft. Allis-Chalmers and Productive Equipment Co. screens operating in series. The various finished products, ranging from ½-in. down to 50-mesh, are delivered to individual storage bins. Fine material passing the final screen is fed to a 6-ft. Combustion Engineering air separator, which in turn discharges a finished product to another bin.

These graded materials are delivered to valve-type St. Regis packers for bagging, and are then transferred to the warehouse or directly to loading for shipment by rail or truck. Materials processed in this phase in excess of shipping requirements are transferred to another department for dry grinding.

The above processing facilities are known as plant 4. A companion operation, plant 5, incorporates similar processing, and is equipped with 4- by 10-ft. Seco screens. However, excess sizes from this operation are not, as in the case of plant 4, sent to another department, but are delivered to a pair of Raymond mills provided for this circuit. Finished materials are bagged with a Kraft-packer, an open-mouth type unit, and St. Regis valve-type impeller and Fluopacker packing machines. Production officials express particular satisfaction with the low maintenance requirements on the open-mouth packer and the Fluopacker.

In dry-grinding operations of plant 2, the feed is delivered to



One of the battery of 4- by 60-in. centrifugal classifiers in the wet-grinding plant.

three 50-in., 5-roll high-side Raymond mills that are equipped with 6-ft. double whizzer separator-classifiers. Ground products, ranging from minus 40-mesh to 99.8 percent passing 325-mesh, are transferred to storage ahead of a valve-type packer.

For the third basic processing operation—wet-grinding—crusher-run material from primary reduction is passed over a scalping screen for removal of the minus ½-in. fraction. These excess fines are conveyed to the feed bin of the Raymond mills noted above, and the scalper-retained fraction goes to storage bins ahead of a battery of Hardinge Tricone mills in plant 3.

Fed by company-fabricated feeders at the rate of about ½ t.p.h., the mills deliver a micron-sized slurry to 4-cell flotation equipment for removal of traces of off-color material (mainly pyrite and graphite), and is then pumped to a group of 40- by 60-in. Bird centrifugal classifiers.

Oversize in the classifier underflow is returned to the Hardinge mills, and the overflow is then pumped to wet cyclones; the overflow from the latter passes over Sweco screens before entering Buchart thickeners. From the thickeners, overflow water is returned to the mills, and the underflow is pumped to a set of 4- by 10-ft. drum dryers.

Any agglomeration of materials due to drying is broken up when the dryer discharge is delivered to a Mikro-Pulverizer. After this reduction the products are bagged, and the packaged items are transferred to the warehouse or directly to the loading dock. Although some of the output of the various processing lines is shipped in bulk, more than 90 percent is shipped in 50- and 100-lb. paper or burlap bags.

With the average particle size for any of the 40-odd items produced in this operation falling in the range of minus ½-in. to 2½ microns, the products are classified for marketing as (1) wet-ground; (2) dry-ground, air-floated; and (3) screened.

Typical applications for screened material include roofing and terrazzo work. In the dry-ground range, several items are sold for use in specialty cements, ceramics, swimming pool coatings, tile filling, rock dust, insecticide, asphalt filler, etc.

Products such as roofing stone, terrazo, and poultry grits are bagged with this equipment. More than 90 percent of the output from the various processing lines are bagged for shipping. It is classified as wet-ground; dry-ground, air-floated; and screened.

The finest materials (averaging 2½ microns), produced by wet grinding, find their main application as fillers and extenders in the paint, rubber, plastics, and paper industries. One product in this line is used by many chewing gum manufacturers.

Appropriately, the unusually varied output of Calcium Products Division is marketed on a national scale. Shipments are also regularly made to foreign customers. Domestically, products are sold coast to coast through 30 distributors, who are supplied from warehouse and plant stocks at 25 locations.

A critically important contribution to successful marketing on such a scope stems from the process control and research activities centered in the plant laboratory. Constant quality checks, as well as special tests, are routine, to assure customer satisfaction. In addition, technical service, allied with the sales organization, is furnished as an aid to the customer in obtaining maximum results in product utilization. A third primary lab function involves continuing research toward development of new products, new uses for existing products, improved processing, and quality.

Heading this young organization and its interesting operations is W. B. Tate Jr., vice-president and manager. Key production and supervisory personnel include Nelson Severinghaus Jr., production manager; L. D. Hammondtree and J. B. Jones, plant superintendents; J. E. Waldrop, quarry superintendent.

Superior Stone

(Continued from page 89)

Dodge-Timken bearings. The conveyor belting is Boston Woven Hose, Hewitt-Robins, Goodyear, and Quaker. The larger conveyors are driven through Falk herringbone speed reducers, and the smaller conveyors are driven through American Pulley Speed-King reducer units and V-belts. Most of the screencloth is Hoyt, with some Tyler Toncap and Hendrickson punched plate for the finer sizes. Cast manganese plate is also used on the primary scalping screens and the rinsing screens at the loading stations.

Superior Stone Company has been a division of the American-Marietta Company since May, 1959, but has retained its officers and key men. Officers are: W. T. Ragland Jr., president; John Bratton Jr. and Joe Yates, vice-presidents; and L. B. Shuping, secretary-treasurer.

At the Dan Quarry Ralph Shuping is general superintendent; Harry Winchester is plant foreman; Harry Miller is sales manager; Elwood Collins is primary plant foreman; and H. M. Handy is drill foreman.

significant developments in industrial minerals revealed at A.M.C. Meeting

By HARRY F. UTLEY

ANOTHER ON THE SPOT REPORT

ABOUT 3,000 persons identified with the metal-mining industry or with the production and processing of industrial minerals gathered September 14-16 for the annual convention of the American Mining Congress. In convening at Denver, A.M.C. returned to the city of its founding. The Congress was established in Denver in 1898, and made its headquarters there until 1908, when it was moved to Washington, D. C.

Cris Dobbins, president of the Ideal Cement Company and prominent Denver industrialist, was general chairman of arrangements for the meeting and he presided at the welcoming luncheon on the opening day of the gathering.

5½-Mile Conveyor Described Another Ideal executive, George Wiley, chief engineer, presented a paper of outstanding interest, describing the installation of a 36-in. by 5½-mile overland belt-conveyor at an open-pit mining session. The conveyor, which carries minus ¾-in. limestone from the quarry crushing plant, as well as minus 6-in. shale, to the Ideal cement plant at Ada, Okla., had just gone into service three weeks earlier—on August 25, 1959. It is now transporting material at a 1,000-t.p.h. rate and makes four overhead crossings over railroads and highways along the route. Belt speed is about 500 f.p.m.

Mr. Wiley described the preliminary studies involving available means of transport, including (1) the belt-conveyor, (2) a railroad, and (3) motor trucks, and the conveyor method won out handily. Link-Belt Company was awarded the contract for its construction on a competitive bid basis.

Structural members, which also serve as a protective cover, are of prestressed-concrete channel beams. The prestressing and casting were carried out in the field convenient to the project. The longest member, 97 ft., weighed 48,500 lb. Channel stringer sections supporting the idlers were 50 ft. long for the most part, however, and each weighed 9,230 lbs.

Cris Dobbins, president, Ideal Cement Co., general chairman of arrangements, A.M.C. meeting.

There are seven separate flights in the system, ranging from 550 to 11,766 ft. in length, and the latter is probably the longest single belt-conveyor flight in operation anywhere, according to Mr. Wiley. The carrying idlers are spaced 5 ft. on centers, the return idlers on 10-ft. centers. A total of 5,711 troughing idlers and 2,855 return assemblies were used.

The Goodrich 4-ply belting totals 57,614 ft. and carries a $\frac{3}{16}$-in. top cover and $\frac{1}{16}$-in. bottom cover. Norblo 80AM 2-compartment dust collectors are mounted at the transfer points. A metal detector on the first flight automatically marks contamination with a puff of powdered chalk to assist in the manual removal of any offending tramp iron. The entire system is interlocked electrically, and control of all flights is centralized at the cement plant.

Connected horsepower of the motors totals 1,050; the largest motor on the longest (No. 3) flight is 300 hp. Belt tension ranges from 4,100 lb. on the short No. 7 flight, to a mighty 47,200 lb. on the No. 3!

Three-in-One Conveyor In Gypsum Mine R. B. Jordan, chief engineer of the Universal - Atlas Cement Company, described the modernization of that firm's Clarence Center, N. Y., gyp-

sum mine, with emphasis on a unique "accordion-pleated" belt-conveyor capable of conveying up steep gradients, as well as around corners.

This conveyor eliminated the need for the old mine shaft, a vertical bucket elevator, and a conventional surface belt-conveyor. It is known as the Serpentix Conveyor, and the Clarence Center installation is said to be the first such in the United States.

Made by the Albert Stubbe Company of Vlotho, West Germany, this conveyor has molded-rubber sections shaped somewhat like the pans on a pan-conveyor, with a single pleat-fold between sections. Beneath the rubber belt are steel, trough-shaped stiffeners attached to a chain to provide belt strength and the pulling power for the carrying strand. Support and guidance is provided by roller carriages on 3-ft. centers which ride in U-shaped rail guides on either side of the conveyor.

The conveyor, declared Mr. Jordan, can easily convey up a 40-degree slope with little roll-back and can make many turns on a horizontal plane. At Clarence Center the conveyor is about 250 ft. long and inclines approximately 30 degrees from the horizontal. Belt sections are 31½ in. wide and designed to carry 150 t.p.h. of gypsum at about 200 f.p.m.

The mine at Clarence Center has been in operation since 1926; and until the recent improvements were completed, mining methods employed were generally of that era. The gypsum seam, 50 to 75 ft. below the surface, ranges from 24 to 42 in. thick. As costs continued to rise in recent years, two alternatives were faced by the company—(1) to close the mine and dispose of the facility, or (2) to modernize the mine and reduce production costs. The latter course was adopted after studies indicated that mechanical loading, moving the crushing operation into the mine itself, replacing track haulage with belt-conveyors, and conversion from 25- to 60-cycle power would produce the desired results.

A Goodman 975 loading machine now loads the mined gypsum onto two Goodman shuttle cars which work in tandem and discharge onto a 36-in. Goodman Ropebelt conveyor. At present this belt is 70 ft. long but it will eventually be extended to 2,000 ft.

J. R. Kringel, vice-president, production, New York Trap Rock Corp., described his firm's methods of handling complaints on blasting.

The product is conveyed to a 36-in. Universal Wobbler feeder, which scalps off plus 1½-in. gypsum and feeds it to a hammermill for reduction to minus ½ in. This product is carried by another Ropebelt to the main heading in the mine. From this point the Serpentix Conveyor takes over, delivering to the surface loading station.

After 60 days of operation, production costs were reduced substantially, and Mr. Jordan believes that greater savings will continue to be realized when operating personnel gains experience.

Belt-Conveyor in West German Lignite Mines A progress report on the use of wheel excavators and belt-conveyors in the open-pit lignite mines of West Germany was presented by Robert E. Kendall, assistant mine superintendent, U. S. Borax & Chemical Corporation, Boron, Calif. He said his inspection of the German installations revealed tremendous progress in this field and that belt-conveyor transportation is rapidly supplanting traditional rail haulage for both coal and overburden.

The study was made for possible utilization of German methods in the company's Boron pit since increased depth and length of haul are forcing the firm to seek a solution which may supplant its present rubber-tired haulage system.

Mr. Kendall declared the German mines have wheel excavators ranging from one-man rigs at 200 t.p.h., to giants capable of digging 130,000 cu. yd. per day from a 150-ft. face. "And when it comes to conveyor practices," Mr. Kendall related, "you have to throw away the book."

The Germans, he revealed, are running miles of belts at speeds up to 1,200 f.p.m. He also declared that they gave up the 20-degree troughing idler years ago in favor of a 30-degree idler, to gain capacity. He added that their transfer-point design is also improving and that they can move a 2,000-ft. long conveyor 200 ft. closer to a pit face and have it running again in 8 hours or less.

Blasting Techniques for Suburban Areas The broad aspects of conducting large-scale blasting operations in thickly-settled areas, together with some of the resultant headaches, were outlined in a paper by J. R. Kringel, vice-president-production, New York Trap Rock Corp. Mr. Kringel described the operation of four of his company's quarries located in residential suburbs of New York City and suggested methods of approach for handling home-owners' complaints about blast effects.

Various field-proven techniques for reducing noise and air-blast propagation from primary blasts were described; and the speaker reduced atmospheric conditions as they affect air blasts to simple terms, in order to provide the average operating man with enough knowledge to recognize such conditions, to evaluate their influence on blasting operations, and to take the necessary precautions.

New York Trap Rock is one of the few operators which owns its own portable seismograph and retains a full-time employee qualified to operate it and interpret its indications. Since 1946 the company has taken seismograph readings on every primary blast—and some secondary blasts—for a total of more

than 1,000 recordings to date.

"Our blasts seldom produce seismic vibration energies of more than one-tenth that considered damaging to reasonably well-built structures, and over a period of years they have never equalled, much less exceeded, the damage criterion. Through seismograph data we have also been able to improve our blasting techniques in terms of emitted vibration."

Most complainants mistake noise and air blast for ground vibration; and as these two effects are reduced, complaints fall off, said Mr. Kringel. "Fewer people 'hear' our blasts since we began using the new LEDC (low energy detonating cord), a well-sheathed Primacord having a powder train weight of one grain per ft. of length . . . "

Use of Ammonium-Nitrate Explosives Recent developments in the use of ammonium-nitrate explosives were described by Professor Melvin A. Cook of the University of Utah, Salt Lake City. He reported that the most significant advances in the ammonium-nitrate fuel-oil (AN-FO) system include the following: (1) clarification of the influence of the surface-active, long-chain hydrocarbon coatings, as compared with kieselguhr coating for the prilled ammonium nitrate; (2) methods of improving density, velocity, and bore-hole pressure in the AN-FO types; (3) development of new, higher-density AN types for use with fuel oil; and (4) the introduction of new improved boosters for this and other relatively insensitive AN explosives.

Detailing some of these advances, Professor Cook said that the surface-active, organic (long-chain hydrocarbon) sulphonate coatings sensitize AN to the explosive level in relatively small percentages. Sodium nitrate and ferrosilicon improve density and performance of AN-FO mixtures, as also does the blending of coarse and fine high-density AN, to achieve higher density and velocity.

Introduction of the new "Procore" (3C and 2A) boosters by the Intermountain Research & Engineering Company of Salt Lake City is an all-important new development which should contribute greatly in the further development and use of field-mixed ammonium-nitrate explosives, Professor Cook believes.

Phosphate Mining in Western States Although the mining and processing of phosphate in the west is relatively still in its infancy, additional new properties have been developed, and production has been increased at a great rate since World War II, according to O. E. Pothier.

Mr. Pothier, director of mining operations for the J. R. Simplot Company of Pocatello, Idaho, spoke at an open-pit mining session. He pin-pointed the deposits in an area within portions of Idaho, Montana, Utah, and Wyoming and declared that they contain 60 percent of the nation's present reserves.

The shale member of the phosphoria is 75 to 180 ft. thick, he reported, and in certain areas contains 30 ft. of minable ores. Two distinct beds are present, namely: 3 to 6 ft. of high-grade rock desirable for the direct production of phosphate fertilizers, and approximately 20 ft. of phosphatic shales, most of which are suitable for utilization in elemental phosphorus production.

Mr. Pothier said the Simplot company mines over a million tons of ore annually from open pits, using rippers, scrapers, 2½-cu. yd. shovels, and the necessary supporting equipment.

Safety Precautions in Potash Mining A good safety program is a "must" in any industry, but there are certain aspects peculiar to the mining of potash which make such a program doubly important, according to Robert A. White, safety supervisor of the Southwest Potash Co., Carlsbad, N. M. His talk on administering a safety program was a part of a special convention session devoted to accident prevention.

Ninety percent of his company's mining force came from the coal fields of Illinois, Ohio, and West Virginia, Mr. White related, and the men are widely experienced in mining. Potash mines, of course, are relatively safe in comparison to underground coal-mining; so his main problem is to keep the workers from relaxing their attitudes on safety.

Outlining the safety program which Southwest Potash has developed, he included compulsory first-aid training, extensive use of safety equipment for the men, constant safety checks of the mine workings, and a continuing safety-education program. He concluded with emphasis that a safety program has to be sold to the worker, and that it had been his company's experience that this can be done successfully primarily through the personal approach.

Income Taxes And Equipment Replacements National and local income taxes rank high among the factors which must be weighed in considering the replacement of equipment in the mining industry, members were reminded by F. G. Kuehl, vice-president of operations, International Talc Company, Gouverneur, N. Y.

Speaking at a session devoted to management problems, Mr. Kuehl pointed out that the savings from new equipment must be sufficient to recover the original investment in a 3- to 5-yr. period, and these savings are substantially reduced by the income taxes imposed by federal and state governments. He also warned his audience that management often fails to include fringe costs in analyzing labor costs for the purpose of determining whether new machinery should be installed. He pointed out that published data indicate fringe labor costs may run as high as 63 cents per hour per man—equal to full wages in many areas 20 years ago.

In computing the economic effect of new installations, Mr. Kuehl said interest on the original cost of the new installation, depreciation, and insurance costs must be charged against projected savings. After these adjustments are taken into account, the resultant savings from higher unit output, lower labor cost, lower maintenance expense, etc., must be sufficient (after reduction by income taxes) to warrant diversion of funds to this purpose.

1960 Convention The 1960 convention will feature an extensive exhibit of machinery and equipment and will be housed in the huge convention hall in Las Vegas, Nev. The dates are October 10 to 13, 1960.

forecasting setup found valuable by large corporation

can also serve small producers

Co-ordination of Sales and Production

By V. G. AUBRY JR.

Vice President in Charge of Sales
Houdaille Construction Materials
Houdaille Industries, Inc., Morristown, N. J.

IN OUR company the prime sales policy is to have the right kind of material in the right quantity at the right place at the right time and, hopefully, for the right price. Now, to do that we have run into three basic problems, all of which revolve around this matter of co-ordination of sales and production. I do not know which word comes first, actually—sales or production. I always like to put sales first because I firmly believe that in business, nothing begins until something is sold.

Basic Problems The three basic problems of co-ordination are:

1. Balance of production with sales
2. Inventory control
3. Sales, production, and profit forecasting

As many of you know, our company is absentee-owned; our concern functions as a subsidiary wholly owned by a parent corporation, and naturally the parent corporation is anxious to know what it is going to get back for the money which it has invested. It likes to know well in advance, so we have the problem of timing. It takes time to get the necessary data together as we are operating out of 28 locations; and we prepare this data for all these locations.

Plant Schedule Form The sheet which we use to accomplish this is what we call our "plant schedule." (See form on page 100.) It is basic as far as the commencement of all our sales, production, and profit forecastings are concerned.

We are divided into three main districts with three district sales managers and three general superintendents—each of whom has responsibility and authority for a certain segment of our organization in his own area.

Field Contacts The sales department is responsible for the original entries on the plant schedule. It originates in the field, at the grass roots, so to speak. The first information that is entered on the schedule is in the section which covers the data concerning sales to customers.

Our salesmen start reporting to their district sales managers on the basis of the review of orders which we keep on file and which are checked periodically, along with our billing, as to the development of the job. The salesmen also check with the contractors on the job. On this form you will notice blank spaces at the top, going from left to right. In these spaces the various sizes of

In this paper, presented at a sales session during the 42nd annual convention of the National Crushed Stone Association, Miami Beach, Fla., January 27 to 30, 1959, the author points out the value of sales forecasts in the production of aggregates. In his company, which operates crushed stone, sand and gravel, and ready-mix and bituminous concrete plants at 28 locations in the East and Southeast, such forecasts have made it possible to balance production with sales, to control inventory, and to forecast sales, production, and profits with reasonable accuracy. It was pointed out in the ensuing discussion that similar methods of co-ordination could be equally valuable to smaller companies, even those operating only one plant.

—The Editor

V. G. Aubry Jr.

material required are inserted.

We are in the sand and gravel, ready-mix, and bituminous concrete business, as well as the crushed stone business; so the form has been left blank and not printed, and we can therefore use it with the various materials. We are also operating in two states, and the nomenclature for the sizes is different in each state.

Sales Forecast The salesmen and the district sales manager, for the operations for which they are responsible, forecast sales by sizes for a 3-month period. We found that trying to forecast the sales of stone by sizes for more than 90 days is not very factual. Then the second 3 months of a 6-month period are forecast only by total tonnage of all sizes of stone.

Starting about the 26th or 27th of any given month, the district sales manager reviews all of the reports from the salesmen covering the operations for which he is responsible and, if necessary, he rechecks them. If we have a large job requiring 300,000 or 400,000 tons of stone, he will recheck that job pretty closely himself to be sure there are no errors in judgment.

The district sales manager formerly also forecast transfers. By transfers we mean aggregates used within our own plant—so-called captive tonnage—that goes into our own ready-mix operations or our own bituminous concrete operations. However, we found the sales department was unable to make a very accurate forecast of such transfer tonnage; so now we have delegated that part of the forecasting procedure to the operating department. We find that this has given us better control.

After the sales managers have completed the forecast section of the plant schedule, these schedules all come to the vice-president in charge of sales. He rechecks them, although somewhat superficially, in case there might be some things concerning either customers or jobs with which he is directly involved and he wants to see that the necessary information is listed.

That, then, completes the sales department's responsibility with respect to the plant schedule form.

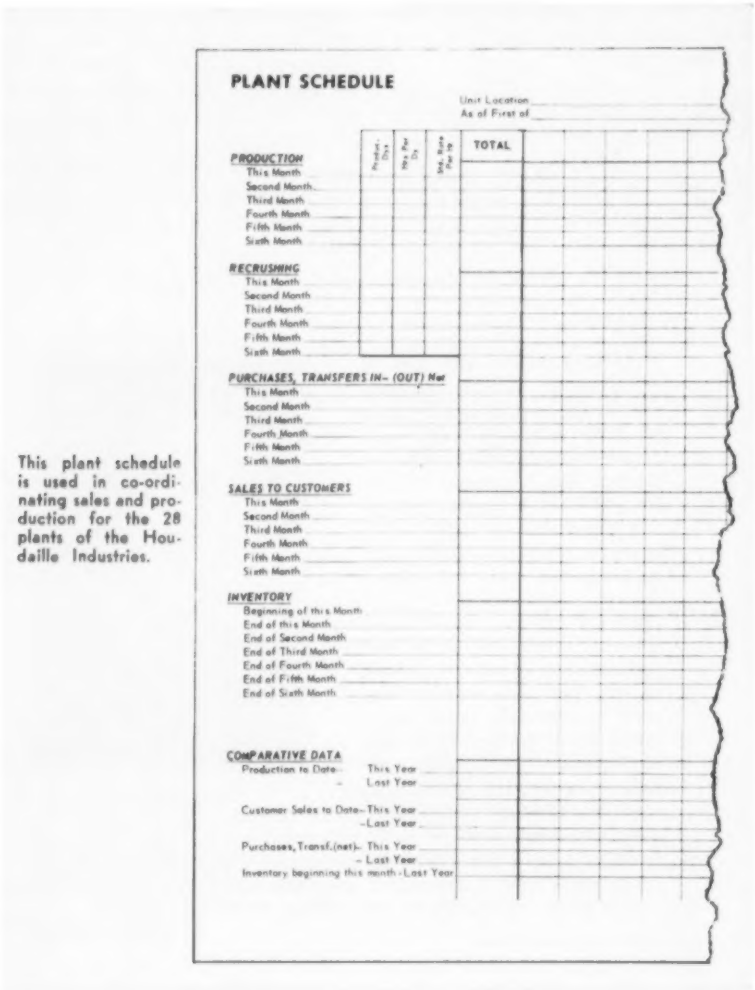
Production and Inventory Control The second basic problem is inventory control. The plant schedule is sent next to the operating department. It gives the operating men an indication of the tonnage sales requirements by sizes for 3 months and totals for the next 3 months.

The local plant superintendents and the three general superintendents perform the same function that we do in sales with respect to the forecast. You will notice from the accompanying form that in the upper left-hand corner, for each of these operations, there is an indication of the number of working days of operation in a month, the hours per day, and the rate of tonnage produced per day. Again, these figures are forecast.

After the plant foremen and general superintendents have completed their part of the plant schedule, it goes to the vice-president in charge of operations, who has a responsibility parallel with that of the vice-president in charge of sales in our organization. If he knows he has a "sick horse" some place, he makes sure the information on the plant schedule is accurate. He also reviews the hours forecast, and if anything appears to be out of line, he checks it.

If we are quite busy, it easily might be the 1st or 2nd of the month before the plant schedule reaches the operating department. The operating department requires a couple of days to process the plant schedule and then sends it to the accounting department.

In the accounting department the arithmetic is performed which brings out the information for the



PLANT SCHEDULE

Unit Location _____
As of First of _____

	TOTAL
PRODUCTION	
This Month	
Second Month	
Third Month	
Fourth Month	
Fifth Month	
Sixth Month	
RECRUSHING	
This Month	
Second Month	
Third Month	
Fourth Month	
Fifth Month	
Sixth Month	
PURCHASES, TRANSFERS IN– (OUT) Net	
This Month	
Second Month	
Third Month	
Fourth Month	
Fifth Month	
Sixth Month	
SALES TO CUSTOMERS	
This Month	
Second Month	
Third Month	
Fourth Month	
Fifth Month	
Sixth Month	
INVENTORY	
Beginning of this Month	
End of this Month	
End of Second Month	
End of Third Month	
End of Fourth Month	
End of Fifth Month	
End of Sixth Month	
COMPARATIVE DATA	
Production to Date– This Year	
– Last Year	
Customer Sales to Date– This Year	
–Last Year	
Purchases, Transf.(net)– This Year	
– Last Year	
Inventory beginning this month–Last Year	

This plant schedule is used in co-ordinating sales and production for the 28 plants of the Houdaille Industries.

Inventory Record at the bottom of the plant schedule.

The accounting department also inserts on the plant schedule comparative data, which indicates where we stood last year and where we stand this year at this given time. We quite often find this information of value, particularly in reporting or forecasting, where there might be large discrepancies, plus or minus, with respect to the previous month's forecast. Occasionally we can pick up such discrepancies on the basis of this comparative data.

Review and Distribution Of Forecast After the accounting department has completed the processing of the plant schedule, usually about the 4th of the month, we have a sales-production meeting.

The vice-president in charge of operations and the vice-president in charge of sales sit down with the respective district sales managers and the respective general superintendents and review the forecasts, because by this time a week has gone by and you can certainly imagine that in the months between May and November much can happen in a few days.

Assuming there are no changes, the plant schedule is then blueprinted and sent out to the appropriate district sales managers and plant foremen, so that they know what their forecast is. They then have a method of gauging *what they are doing* with respect to *what* we hope *they are going to do.*

Monthly Sales Forecast By Plants In the sales department we then get into the next phase of forecasting, which becomes more and more delicate. We now take the plant schedule, and from it a sales forecast is made by plant for each month for 6 months, and the average selling prices of materials for each of those locations is correlated to the unit forecast on the plant schedule. The result is a dollar volume forecast for each plant for each of 6 months.

Profit Forecast That information is then the finished sales forecast, which goes back to the accounting department. The accounting department takes this sales forecast, the operating forecast, and the purchasing forecast, and works out a profit forecast. The profit forecast is used by our company and also sent to the parent corporation.

The parent corporation has set a maximum allowable deviation on sales and profit forecasting of 5 percent, and fortunately we have been able to stay within this figure.

In the course of a year's operation we also make a quarterly forecast for an additional year. The entire quarterly forecast is done on total units and dollars, not on sizes of stone. The quarterly forecast is a requirement of the parent corporation. I personally question somewhat the validity of the figures after 365 days.

Adequate Communications Systems Essential It is amazing how accurate a forecast can be made right on through the profit levels if there is an adequate communications system. We stress very strongly the need for adequate communications, so that everybody understands everybody else throughout our whole sales organization and throughout our whole operating organization. We think this is extremely important.

We have found that there is nothing better than the monthly sales-production meeting for co-ordination and communication. We try to meet more often, and usually do in the course of the active busy season, in order to discuss the whole problem of co-ordinating sales and production.

We find the plant schedule to be especially helpful in that it keeps us aware and keeps us advised as to conditions, inventory-wise, as far as our materials are concerned. As you can readily understand, it does no good to have 50,000 tons of 2½-in stone when you need 50,000 tons of ⅜-in. stone.

. . . . Discussion on Sales-Production Co-ordination

QUESTION: In crushed stone production weather is a big factor. Are your plant schedule forecast figures thrown off if you have a bad month in the summertime?

CHAIRMAN AUBRY: There is no question but that weather can complicate the forecast. However, in the summertime with the kind of weather we have, we may lose out on Wednesday, but by Thursday, if it has dried off, with our ground conditions, we usually get caught up. It is in the fringe months at the beginning and end of the season when the total volume of sales, units, and dollars is very low that the effect of the weather is considerably more pronounced, and we have trouble forecasting. In addition, the weather is a lot worse and you can have an entire bad week that will throw you off indefinitely.

We keep a constant weather check. Being in the ready mixed concrete business, our ready-mix stations keep their own record of the temperature and general weather conditions—if it is cloudy, or if it is rainy, or if it snows, or if the roads are icy. We run over 100 of our own ready-mix trucks, and in order to keep the proper records on them, we need this weather data. Therefore, we can get a fairly good idea of what last month's weather was, and even what the weather was a year ago, and we do check that in the case of these fringe months.

COMMENT: One thing that you brought out so well may escape some of the producers here. You have a large organization and you make your forecast in a formal way. Perhaps it might not have occurred to smaller producers what they can do along this same line for themselves.

There is a need for co-ordination, just as you brought out, between sales and production even in smaller companies—and we are a smaller company. I think what your company does formally is no less important for a smaller company to do informally and have a constant liaison between sales and production.

When you get into a smaller company, you take a lot of things for granted because you see eaeh other quite often. We have found in our company that although we see each other almost every day, nevertheless it is important every so often, without going through the

formal aspect of it, to be sure that the plant superintendents, and any others involved, are fully advised of what the needs are and what the demands for services are, because they should not be taken for granted. I think you brought it out, except that your organization is so large that a lot of fellows may think it is not for them because they are so much smaller.

CHAIRMAN AUBRY: That is a very good point because before we were bought by the parent corporation we operated on a smaller basis using this technique. We found this technique equally important, even if there is only one operating location because you can be just as bad off at one location as you can at several points.

Occasionally we do have the required facilities at one location, which in turn becomes a problem in the manipulation of orders between one plant and another, depending on where there are overages or shortages. I agree with you, very definitely, that regardless of the size of the operation, there is no question in our minds that co-ordination of sales and production is an extremely important part of any operation, even in the utilization of the ready-mix business or the blacktop business. I think that is a good point . . .

Cody, Wyo., is the site of a $3,000,000 gypsum board plant to be built for the Big Horn Basin Company, a newly chartered Nevada firm. Sid H. Eliason, president of the company, states that the facility will be ready for production next year, and that annual output will be 100,000,000 ft. of gypsum board.

Output of the British cement industry so far this year has been quite reassuring to its operators. In May, output was the highest ever recorded—1,060,000 tons.

$1,000,000 Crushing Plant Planned by Shands & Baker At Live Oak, Fla., Site

Shands & Baker, Inc., Jacksonville, Fla., has leased 1,500 acres at Live Oak, Fla., on which the construction of a $1,000,000 crushed stone plant is expected to be undertaken in the near future. The property was leased from the Live Oak Stone Co., which will continue to operate its present plant. Sales for the latter have been taken over by the Shands & Baker group.

The new plant will be owned by Shands & Baker and will be operated under the name of the Florida Rock Products Company, an affiliate which also has a plant at Brooksville, Fla. In addition to Florida Rock Products, the Shands & Baker firm is affiliated with six other nonmetallic minerals processing operations in Florida.

According to W. B. Shands, a partner, the new operation will produce from 350 to 400 tons of crushed stone per hour. Transportation will be by both rail (Atlantic Coast Line) and truck. Deposits of stone to be used as raw material are estimated to be sufficient for 20 to 25 years.

Bulletin No. 15, titled *Cement Raw Materials in Indiana,* has been released by the Indiana Geological Survey. The report discusses cement manufacture, cementing materials, raw materials source areas, and the relationship of raw materials to transportation facilities and fuel supplies. Priced at $2.00 a copy, the bulletin may be ordered from: Publications Section, Geological Survey, Indiana Department of Conservation, Indiana University, Bloomington, Ind. Add 10 percent for cost of packaging and mailing for each order.

Construction recently began on a $250,000 plant in Crewe, Va., by Boston Concrete Products Company, Inc., for the manufacture of Solite lightweight aggregate. The announcement was made by W. E. Roland of South Boston, Va., one of the principal stockholders and manager of the company.

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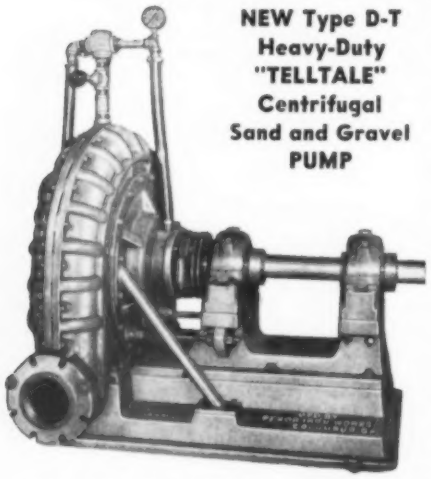

NEW Type D-T Heavy-Duty "TELLTALE" Centrifugal Sand and Gravel PUMP

Have a look at the Type D-T Heavy Duty "Telltale" Pump. Its production is the talk of the industry wherever it has been put to work. Likewise, what it can take under what would be heavy overloading for an ordinary pump.

AS LOW IN DOWNTIME AS IT IS HIGH IN PRODUCTION

"Telltale" is the only pump that warns when it's time to reline. Air sucked through periphery ports causes pump to lose its prime. Pumping stops. Water leaking through the ports signals that the shell liner and the surrounding belt of packing have worn through.

Available with either tough semi-steel or best-in-the-long-run Ni-Hard wearing parts in 4", 6", 8", 6 x 8" suction and 8 x 10" suction. Now available also in either alloy, 45 and 90° extra-heavy long-radius flanged elbows. Write for Type D-T Heavy-Duty folder and prices.

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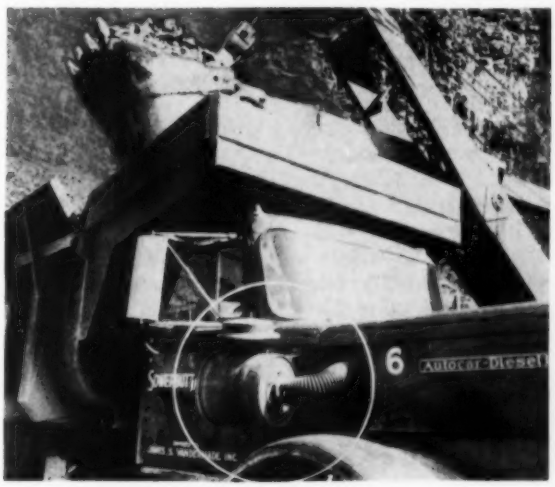

A typical installation of the dry filter (circled in accompanying photo) on a quarry haulage truck. Operating conditions required an extra-fine element. Sowerbutt realized reductions in frequency of filter replacement and motor maintenance.

REDUCTION of equipment overhaul costs and downtime losses are basic objectives of pit and quarry operators throughout the industry. In the case of Sowerbutt Quarries, Inc., a 400,000 t.p.y. crushed stone producer at Prospect Park, N. J., significant gains have been made along those lines.

Benefits obtained stemmed from revision of a type of equipment probably overlooked more often than not in consideration of operating and maintenance expense. Following adaptation of dry-type air filters to quarry trucks, shovels, loaders, air compressors, and crushers, material reductions in frequency of filter replacement, motor maintenance, and consumption of turbine oil were realized.

Tangible evidence of improvement, as noted by J. S. Vandermade, president of the firm, is well displayed in the case of crushing. Requirements for turbine oil were reduced by more than 450 gal. in one 10½-month operating season.

In the quarry operations extreme dust conditions, variable weather, rugged terrain, and steady operation of most equipment made severe demands both on those units, and on the facilities and personnel involved with maintenance. One of the several factors considered in efforts toward easing the situation was the servicing of existing oil-bath filters.

Experiments were started about 5 years ago with dry-type Purolator units on quarry equipment, and results have led to this adaptation for most operating machinery and vehicles.

The crushers, operating continuously in high dust concentrations, are processing about 3,000 tons of crushed trap rock per shift. These are now protected with air filters containing about 1,400 sq. in. of filtering area installed on the original air breather fittings of the turbine oil reservoir. The filters require no servicing, and are changed but once during the year.

(*Continued on page* 107)

Both the drilling air compressor and its motor are equipped with filters mounted side by side, as seen here.

Mr. Manager, how do you determine

By HAROLD J. ASHE

THE amount of money a quarry owner withdraws for personal needs can have a profound effect on his business for good or ill. He may be wise enough to restrict personal withdrawals sharply, assuring business solvency; or he may withdraw more than is prudent, inviting disaster.

One of the common denominators of bankrupt operators is the excessive personal withdrawals made up to the time creditors move in.

Determining the amount of cash an owner can take out of his business is not so simple as it may seem. Obviously, he should not withdraw for personal needs more cash than is represented by his net earnings. To do so for any length of time is to court failure.

An owner may feel on safe ground as long as personal withdrawals do not exceed *net earnings*. Certainly, this practice is preferable to withdrawing too heavily, but it may also be dangerous in the long run. Such a policy does not take into account the continuing, never-ending need for additional capital, which is necessary to take care of growth and expansion. Lack of additional capital will stunt business growth and profits if, indeed, there are any under such adverse circumstances.

Many a promising quarry venture has failed because the owner failed to provide for mounting capital needs out of earnings. Out-dated machinery and equipment is tolerated so that ownership can drain profits from the business and live for at least a short time a little higher on the hog. Some quarry operators mine their properties in more ways than one. Not only do they exploit the natural resources at their disposal, they "mine"—*undermine* is really the word — their capital assets as well. They deplete their depreciable assets. Obsolete machinery and equipment is used long after its retention can no longer be justified on economic grounds. Efficiency declines as well as profits, and competitors therefore become more efficient and gain the advantage.

Because little or no earnings are plowed back into the business, the venture may struggle along year after year cash-hungry. Its owner may have too little real equity in the business. This may even decline with the years because the owner is trying to solve his dilemma with borrowed funds and deeper indebtedness.

Safe Policy—

Business survival dictates that an owner *consistently* withdraw less cash than his business earns. How much less should be withdrawn will depend on two factors: (1) his *basic* personal needs, below which he can't subsist, and (2) his *business* needs.

After some soul searching, an operator with modest earnings may conclude some of his personal "necessities" are actually luxuries which he can't afford.

Modernization—

Each year that an operator is in business his plant is one year older, that much closer to obsolescence. This is true of all his depreciable business assets. Because of this fact, he is permitted to charge, for purposes of calculating his income tax, a certain percentage of initial cost annually to depreciation. He very likely welcomes this device as a tax-reducing measure, even as he fails to consider its other implications.

Depreciation—

As a matter of fact, depreciation charges in the aggregate won't begin to pay for replacements when the time comes. This is one of the hard realities of business today. It is one problem which confronts both big business and small businesses. Even when the aggregate amounts charged off for depreciation are retained for purposes of eventual replacement, such funds always fall short of replacement costs by a substantial margin. The longer the useful life of an asset, the wider the spread between funds available for replacement out of annual charges and the replacement price tag.

Thus, a quarry owner in such a situation is not breaking even, in terms of physical depreciable assets, since his reserve fund buys fewer physical assets in terms of machinery and equipment than he had earlier. Relatively, his capital is declining, even if, in terms of nominal dollars, it is constant.

An owner, if he so elects, may even withdraw the cash represented by depreciation charges. Regrettably, some owners do just that. If an owner's income tax return reports $20,000 net earnings, plus $5,000 depreciation charges for the year, $25,000 in cash is available to him, less income tax on $20,000. However, when he withdraws that $5,000 —neither putting it in a reserve fund nor reinvesting it in his business— he is appropriating $5,000 of his

your personal withdrawals?

capital. This is a management fact as certainly as if he had sold off $5,000 of his assets and pocketed the money.

Business Equity—

An operator may start his business under a heavy burden of debt. His business equity may continue dangerously low, or sink even lower. With the passage of time, however, there is less and less excuse for such indebtedness. With favorable earnings, this indebtedness should be reduced, and his equity increased. This, in itself, will increase his net earnings because interest charges are reduced.

Establishing Base Withdrawals—

The basic weekly or monthly withdrawal should have a direct relationship to net earnings. The previous year's income tax return may be consulted, if the present year appears to be comparable. From such estimated earnings should be subtracted such amounts as are determined necessary for plowing back in the business. The remainder, then, is the amount available for personal withdrawals.

However, the weekly or monthly withdrawal has still not been determined. To provide a safety margin, a part of the funds estimated to be available for personal withdrawals should be held back for quarterly, semi-annual, or post-year-end withdrawal. This provides a cushion in the event that actual net earnings fall short of the estimate.

Some Examples—

Suppose a small non-corporate quarry owner estimates his net earnings at $20,000, before income tax. He has five exemptions; and he takes the standard deduction and files a joint income tax return. His income tax is $3,920. This leaves at the most only $16,080 for personal needs.

Quarry machinery and equipment, other depreciable assets, are being charged off at the rate of $5,000 a year. On the basis of present price trends, replacement costs will be 50 percent higher at replacement date. This means another $2,500 must be set aside for replacements out of earnings each year. He recognizes the necessity for increasing his business equity; so he decides to reduce his indebtedness by $2,500 each year. Now his $16,080 net earnings, after income tax, stand at only $11,080 for personal needs.

He arbitrarily excludes $1,480 to provide a small cushion against a drop in estimated net earnings, leaving only $9,600 or $800 a month for personal withdrawals. If net earnings prove to justify this estimate, he can make an additional withdrawal from that $1,480 every three or six months, and still have some reserve right up to the end of the year.

This may sound like a tough formula to live with, but it reflects the objective realities of this particular quarry operator's situation. Out of $20,000 net earnings, before income tax, he gets for his personal use only a little more than 55 percent for personal use. However, after satisfying the Internal Revenue Service, he has plowed back $5,000 of earnings into his busines. He is $5,000 better off at the year's end than at its beginning.

An example of a relatively small operator has been used deliberately. In the case of larger non-corporate businesses, as well as closely-held corporate quarry ventures, the amount of net earnings, percentage-wise, which may be realistically available to an owner or corporate principal may be even less. This is so because of the heavier tax bite which the government asserts on earnings, either individual or corporate, or both.

Sticking to the Formula—

Once an operator has realistically figured what he can safely withdraw from his business, he should stick with it. As his bank balance rises, he may be tempted to withdraw more money. He should wait until after the year-end to do so, and then only if net earnings are more favorable than he had originally calculated. Even then, a part of any additional earnings may be wisely invested in the business to hasten the process of building up the equity.

Personal Checking Account—

As an aid to keeping personal needs under control, it may be a good idea to have a personal checking account, depositing withdrawals therein. A glance at the running balance may act as a restraint on personal spending that cannot be justified. If a sharp separation is made between personal and business needs, maintaining a personal checking account will help discourage tapping the business checking account for extra personal needs.

Even Keel—

Determining the *minimum* periodic withdrawal will put withdrawals on an even keel. Consid-

ering sharp fluctuation in gross receipts and seasonal rise and decline in volume, withdrawals are likely to get out of hand. A feast-or-famine personal situation results.

During slack periods an owner may withdraw too little for personal needs; during peak periods he may withdraw more than a normal amount. Overall, however, withdrawals are more likely to be excessive because there is a built-in excuse for excessive withdrawals whenever cash is available.

Partnership Withdrawals—

In a partnership it is no less important that there be restraints as to personal withdrawals. Unless there are controls, the partnership may be strained. One partner may withdraw more than another, up to the limits of earnings. If one partner withdraws less than the other, he is, in effect, lending the partnership the funds he has not withdrawn. Many a partnership has been dissolved because of disagreement as to the amount of personal withdrawals and/or what part of net earnings should be invested in the business.

Personal withdrawals made by partners should be carefully thought out. The points already covered in this article should be considered. These, however, may need to be modified on the basis of the circumstances of each partner. If one partner has a large family, he may need to withdraw more funds than his partner, who is without a family. Real personal hardship and an unhappy partnership may result if one partner callously insists on plowing back too large a part of earnings into the business. Doing so may force a bare subsistence level for the partner with the heavier personal obligations, although the first partner lives well on the same amount.

Likewise, in determining personal withdrawals, each partner's income tax obligation needs to be taken into account. Net earnings of a partnership are charged proportionately to each individual partner, whether all earnings are distributed or not. The income tax impact on one partner may be far greater than on another. A partner with a large family may have a harder time coming up with his *smaller* income tax than another partner with fewer exemptions and deductions, but a *larger* income tax.

One partner may also have other sources of income from which to meet his income tax bill, while the other must pay his entire tax bill out of sharply limited personal withdrawals from the partnership.

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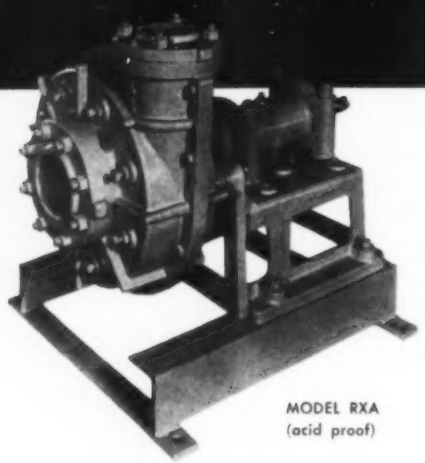

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Enter 106 on card, page 167

Railway Geologists' Report Indicates Mineral Deposits

Significant deposits of shale, bentonite, silica, sand, gypsum, limestone, and gravel have been surveyed and mapped along the Great Northern Railway's Great Falls-Billings line by the company's mineral research and development department, according to the Spokane *Chronicle*.

The firm conducted a 1,100-sq. mile exploration, and a report of their findings, including maps and chemical analysis, is being distributed to interested industries. Gypsum deposits are reported to total 200,000,000 tons, and limestone deposits in excess of 4,000,000 tons are claimed.

Maintenance Costs Cut

(*Continued from page* 103)

Although the filters for the crushing phase were adapted from standard automotive units, those for the 20-ton Autocar quarry trucks are specially designed units with extra-fine filtering elements. This was dictated by the stop-and-go conditions under which each truck averages 40 to 50 round trips per day from shovel to crusher.

Maintenance decreased considerably after installation of the dry type filters. When "downtimed" recently for standard maintenance, a truck, after five years with this unit, required only normal overhaul servicing of motor bearings and rings. Scheduled service calls for oil changes once a year. Previously, at least two changes were required.

Both motor and compressor of 600-c.f.m. diesel-powered compressors supplying drilling air are now fitted with the paper element filters. This is also true of Scoopmobiles, dozers, cranes, and light pick-up trucks. Since no oil is used with the filter elements, mountings could be made in any position. Elimination of sloshing or oil spillage due to rough haulage roads or steep grades has been another benefit realized.

Operating efficiency of these filters, rated at 99.9 percent, is described as constant since such variables as oil level, volume of air flow, and engine speeds are not pertinent. When replacements are needed, the company's mechanics wipe out the filter and replace the element in a matter of minutes.

Turbine oil requirements were substantially reduced after the installation of a filter on the breather fitting of the reservoir.

These factors are parts of the regularly scheduled and diligent maintenance program which has added considerably to the life of the company's equipment. Sowerbutt Quarries, in operation since 1902, primarily supplies road construction, and has provided material for such major highways as New Jersey's Garden State Parkway.

Most vehicles in the operation have been equipped with the dry type air-filtering unit, with resulting decrease in maintenance.

NEW LONG LIFE
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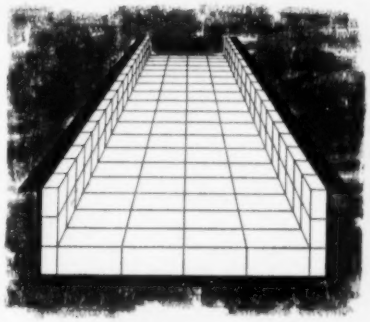

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PORCELAIN DIVISION
FERRO CORPORATION
East Liverpool, Ohio

Enter 107 on card, page 167

Proper Bank Trimming REDUCES Quarry

Adequate secondary drilling and blasting will aid in subsequent trimming.

By PAUL C. ZIEMKE

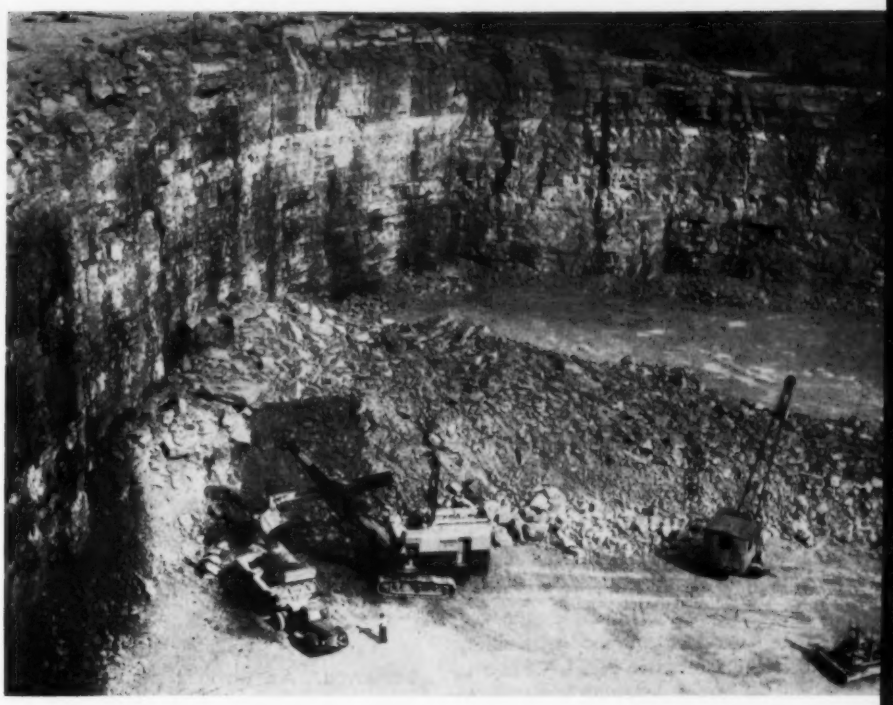
SAFETY statistics for quarry operations show a fairly high incidence of fatal or near-fatal accidents resulting from careless bank trimming. This situation can be improved since the function of bank trimming is one of the most elementary connected with quarrying.

The importance of effective bank trimming is emphasized by the record, which indicates that accidents from slides and rock falls account for some 10 percent of the injuries suffered by employees. In view of the many other potential hazards confronting quarry men, this is a significant percentage for a single category.

One-third of the deaths recorded are charged to mediocre bank maintenance, and many permanent disabling injuries result from the same cause. The work of bank trimming should not be left to chance on the assumption that "it looks all right." The hazard can quite readily be minimized—if not completely eliminated—by following a few hard and

Should a deposit be worked with multiple benches, none should be less than 10 ft. wide for the safety of the crew.

Cleavage and bedding planes in the quarried formation should be studied to determine whether or not vertical walls can be safely maintained.



Hazard

fast rules that have been proved effective. They are:

1.) **Plan** blasting procedures that will not permit the dangerous overproduction of back breaks that leave excessive "loose" hanging precariously.

2.) **Follow up** the blast well ahead of shovels and drills to get the trimming done under unrestrained conditions, and employ plenty of secondary blasts if needed.

3.) **Use well selected** equipment to safeguard the men while on the trim job.

4.) **Employ** barricades, ropes, or fencing to segregate the area under suspicion.

5.) **Use** older, experienced men to supervise and train younger employees less familiar with proper procedures.

Better Blasting Program Investigations made by the large insurance carriers, and by the U. S. Bureau of Mines, have disclosed the fact that much improvement of bank conditions can be realized if blasting and loading techniques are studied and changed as required. Here are some suggestions.

Study the rock formations to determine their cleavage planes since the walls of horizontal formations are safe only if kept vertical. On the other hand, it is dangerous to attempt vertical-type walls for steeply dipping material.

Practice has pretty well proven the efficiency of following the single bench idea for cuts running up to 125 ft. high. Should the deposit be worked with multiple benches, none should be less than 10 ft. wide for safety of men and equipment.

The danger of stepping out of bounds on a bench can be lessened by laying temporary timbers along the toe. In an operation visited by the author, metal staffs were sunk in the timber to suspend safety lines. The lines should be decorated with bright flags as a lasting warning of their importance.

It is an established fact that if the stripping of the overburden is carried back for at least 15 ft., there is then a bench for "loose" to roll onto. If the quarry is in a side hill formation, the stripped bench should be at least 20 ft. wide, with a log or timber fender added to catch loose material.

Stripping should take into consideration the type of prevailing soil and weather conditions of the area. The slope should always be at the angle of repose of the material. Ditching should be done on the high bank to prevent saturation and reduce the load on the quarry pump. Sand bags piled against the toe timber will keep much of the water and mud on the stripped bench from being a problem on the lower levels.

Poor blasting patterns result in considerable oversize material, subsequently requiring a great deal of scrambling about with trailing air lines by jackhammer men. A close inspection of the "box-cars" will often disclose them to be precariously balanced — a condition in which the jar and vibration of drilling can cause them to tumble and roll.

Detailed study of the face will usually disclose where to concentrate high percentage powder, while other sections are "decked" with sand. Frequently sections of hole fail with any loading when segments of rock obscure the bore. The inevitable result is "box-cars," which can be minimized by taking time to clear the blockage.

Most explosives engineers agree that to prevent tall, interlocked masses of material that are dangerous when dug into, a high-faced quarry needs sufficient loading to spread the broken rock reasonably

well. A hung bank can prove quite dangerous, and to safely remove it requires a lot of down time.

With respect to "dobe" shooting, experienced powder men will argue at length on the merits of confining explosive with mud as a "hold-down." Obviously, mud has little or no confining features in intensifying the powder's effect. However, "dobeing" is highly recommended from a safety standpoint, since a charge secured with a wheelbarrow of mud will not dislodge as adjoining "dobes" are shot. In many built-up areas, timed "dobe" shots are required by ordinance.

Stripping should take into consideration the type of soil, and the slope should always be at the angle of repose of the material.

Trimming Methods It is a bit foolhardy to venture up such a hung bank with a bar in order to locate the keystone and to start the mass down. If the above procedure is unavoidable, the bar man should be equipped with safety belt and safety line held from above, with accurate coaching available to tell him of conditions existing beyond his view.

Considerable success has been achieved with the "bomb" method, in which sticks of dynamite are tied in a bundle to a pole that is used to guide the explosive into the area where "angels fear to tread." Fuse is ordinarily used in this procedure, but electrical detonation can also be employed. An obvious precaution is to "stand clear" because of the limited confinement of the charge.

There is one real advantage in maintaining low benches of 20 to 30 ft. in height wherever this arrangement can be placed into effect. The average modern shovel is capable of keeping the low bank wall trimmed without the risk of manual labor.

Some operators use a system that is reported to be effective in handling large rock located too near the face for safe working conditions. As the last shovel pass next to the face is made, the big rocks are undermined to slide down the bank and are left for "plug shooting." They are then usually left to be engulfed in the next blast, unless their number is so large as to warrant a return of the shovel. In this system, much depends on the mobility of the shovel.

It is impossible in many instances to undermine the big rocks near the top of the bank without seriously endangering the crew and equipment. The following method has been worked out by several firms who plug-shoot the boulders that are obviously too large for the shovel dipper.

A liberal width of heavy (12-oz.) duck tarpaulin is laid approximately a dozen feet from the edge of the face, secured by ropes, cable, or even flat stones, and rolled down the face in line with the boulder to be shot. With the tarp long enough to

To prevent high, interlocked masses of material that present a danger in digging, many explosives engineers agree that a high face requires sufficient loading to spread the rock reasonably well.

An advantage in low benching is that the average shovel can keep the bank well trimmed with little or no need for manual labor.

reach the rock pile, the jackhammer man is protected from rolling stones that move under the canvas.

An innovation in that direction is the use of 50-ft. lengths of salvage link fencing rolled over the face to confine the rolling material. It has the added advantage of permitting one to see the material moving down. However, it is necessary to drag it around by tractor or truck. New link fencing is used on banks adjacent to main haulage ways where, despite having been once thoroughly trimmed, the stone tends to ravel due to thawing and freezing.

Since there is nothing static about a working face, it is essential that the utmost scrutiny be maintained as the work proceeds. These established times for inspectors are indicated as "musts"—at the beginning of each shift, after blasting, and after freezing and thawing spells that may render the bank unstable. It is the changing conditions due to weather, daylight, secondary blasting, and earth tremors set up by heavy equipment that often set rock in motion without warning.

Lack of training has resulted in mishaps to many quarry employees who would otherwise have realized the hazards common to sliding or rolling rocks on the face. A condition frequently overlooked is the presence of cracks and fissures that extend into the bank, creating an unsuspected danger. The quarry foreman should inspect the face after blasting and after rain or freezing weather. The scaling down should be performed only after a close check on where to begin, and how to proceed from that point.

Safety Equipment and Barricades All quarry employees should be required to wear safety shoes, as the steel toe protectors have saved many a mangled foot. Safety belts and lines should be of the best material available and they should be given the benefit of a thorough inspection, at least once per week, like those of the power linemen. The line should be no less than ¾ in., and long enough to reach the quarry floor.

Much has been said and written about the best manner in which to secure safety lines. Costs mount rapidly if every scaler has to be secured by a second man on the bench above. A practical plan is to jackhammer a series of holes some ten feet back from the face, and drive anchor bars of 1-in. iron from which to tie off the lines needed. An elaboration of this plan involves stretching a steel cable from anchor to anchor so that the tying can be done at any point convenient to the work. Some operators suspend a cable over the face, with attachment points arranged along the cable length by means of clamps. With several men engaged in scaling, it frequently pays to have one man assigned to changing hitches, taking up the slack, and watching for unforeseen changes in the condition of the face.

A perusal of quarry accident reports indicates that it is unnecessarily dangerous to haul scaling equipment up the face where any disturbance may cause a movement of material. It is much safer to lower the equipment down from the upper bench; then, if things get out of hand, no one is in the path of danger. This, of course, also means that on the bench above, air lines must be provided from which to supply the jackhammers, spare steel should be available, and also any other material that might be needed.

The height of the face and the quantity of "loose" to be trimmed dictates the need for ropes, barricades or warning flags on the quarry floor. Lacking these, many a preoccupied shovel operator, truck driver, or mechanic has walked into danger and injury or death.

Ace Sand and Gravel Company, Inc., Spokane, Wash., has been purchased by Hecla Mining Company for a reported purchase price of $600,000. The new acquisition will be operated through a newly-organized subsidiary, Ace Concrete Co.

Unusual concrete storage building for British cement works

By JOHN GRINDROD, B. A. (Com.)

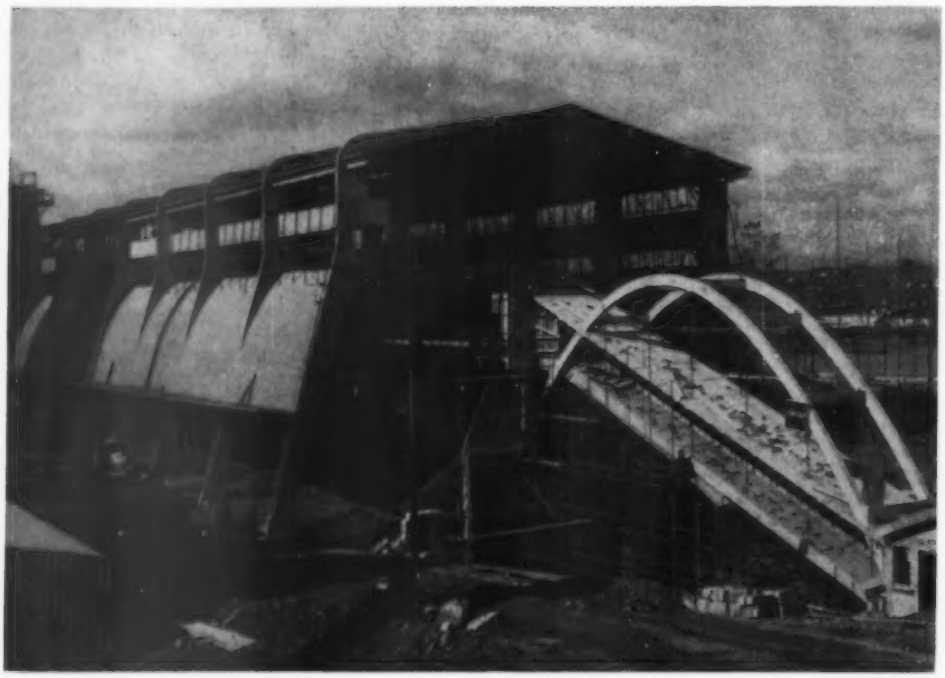
A REINFORCED concrete structure of unusual design has recently been completed as a part of the development of the Saltram Cement Works of the Associated Portland Cement Manufacturers Limited at Plymouth, England. One of the requirements for the economic operation of this particular works is the efficient handling and storage of raw and partly processed materials; and this need has been met by the construction of a reinforced concrete clinker hall of novel design for raw material, clinker, and gypsum. The materials are handled by an overhead gantry crane.

Since it was decided to benefit from the sloping site by forming one end of the building from the existing earth bank and making up the other sides, a building was constructed without walls, in spite of a large capacity, on a comparatively small floor area.

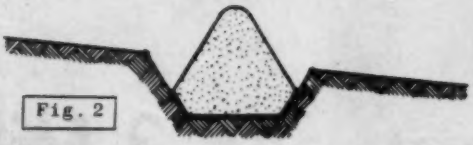
The consulting engineer, H. Spanning, produced a structure to fulfill his client's requirements through elementary steps and principles. For instance, the economical method of containing a quantity of material was achieved by excavating a pit with battered sides (as in Figure 1). Material deposited would take the form shown in Figure 2; and, to keep the material in a dry condition for long periods and permit truck access, the protection given was achieved as shown in Figure 3, this siding being supported by portal frames with "free feet" at 32-ft. centers, as detailed in Figure 4.

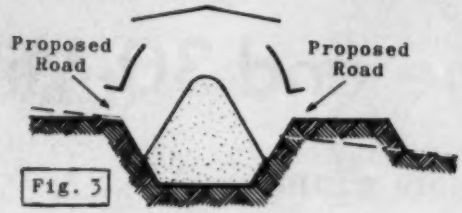
Some 240 ft. by 76 ft. in size, the structure is composed of eight portal frames, thin-shell curtain walls and canopy, crane beam, walkway, and roof section. Detailing of the design was carried out by the contractors, Richard Costain Limited, in collaboration with the consulting engineer.

The section of the inclined leg of the portal frame is 14 in. by 30 in., while the vertical section incorporating the crane beam has a section of 14 in. by 36 in. The span of the portal at the crane beam level is 53 ft. The hinged joint at the foot of the portal frame was formed by throating from 14 in. by 27 in. to 14 in. by 12 in. and

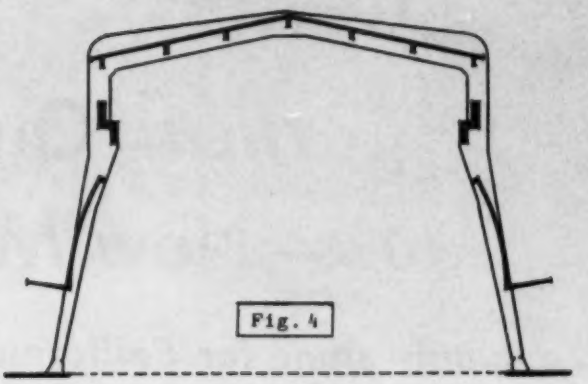


Unusual design keynotes the new reinforced concrete building for storage of raw material, clinker, and gypsum at the Saltram Cement Works, Plymouth, England.





These figures illustrate the economical method used in building the storage structure. The material deposited in the pit is protected by the siding, which is supported by portal frames constructed with "free feet."



crossing the reinforcement at this point.

Incorporating a walkway and a safety parapet wall, the crane beam is of normal design, with two transverse expansion joints through its 240-ft. length, located at the portals. The payload of the crane is 7 tons.

Constructed to a radius of 35 ft. 6 in., the 3-in. thick reinforced-concrete shell wall also incorporates a 4-in. thick reinforced-concrete cantilevered canopy 5 ft. wide. Like the crane beam, the curtain wall has two expansion joints, but in this case these are located at mid span.

At ground level, a continuous beam ties the portal feet together and also acts as a road haunching adjacent to the storage area. Ancillary items, such as raw material bunkers, clinker and gypsum bunkers, six sets of conveyor systems, and crushing and screening buildings also form a part of the project.

Connecting the clinker storage building at one end and the sieve house building at the other, a "fixed" arch conveyor with a span of 88 ft. 9 in. is supported by two reinforced concrete arch beams 16 in. by 9 in. in size, the elevation of the beams being of parabolic form but with the springings at different levels.

The conveyor floor slab, which is 7 ft. 6 in. wide and 6 in. thick, with a grade of 1 in 4½, is suspended from the arches by 1¼-in. diameter mild steel hanger rods which are attached to the slab through upstand edge beams of 17-in. by 6-in. section at 12-ft. intervals on each side. The slab is free at both ends, with locating dowels to prevent lateral movement. Another slab, 4 in. thick and supported by the hanger rods, is located 7 ft. 6 in. above the conveyor slab for protection against the weather. This slab is monolithic to the arches where it crosses, but is free at each end to allow for expansion and deflection.

New Radiometric Technique Expedites MgO Analysis

A new technique, to speed up the analysis of magnesium oxide in portland cement, has recently been reported by scientists at Battelle Memorial Institute, Columbus, Ohio. A radiometric technique, developed in a study of tracer quality-control systems for the U. S. Atomic Energy Commission, cuts the required time from 28 hours to less than one hour. Isotope specialists engaged in the AEC-sponsored study included James E. Howes Jr., Dr. Charles T. Brown, Meyer Pobereskin, Dr. Duane N. Sunderman, and Dr. Paul Schall.

The new procedure for analysis is based on modification of the basic method outlined by the American Society of Testing Materials. The primary change occurs in the labelling of ammonium monohydrogen phosphate with phosphorus-32. This step enables direct determination of the amount of precipitate formed and eliminates the time-consuming digestion, filtration, ignition, and weighing steps required in conventional analysis. In a concentration range of 5 to 15 mg. of magnesium oxide per 100 ml., accuracy of the results have been within 0.05 percent when the results are expressed as percent of magnesium oxide in cement.

RICHARD R. SCOTT has been promoted to assistant sales manager of the Green Bag Cement Division, Pittsburgh Coke & Chemical Co.

A STORY OF DEPLETION

THEN— Quarry and 3-Mile
NOW— New Mine and 30-Mile

To supply stone for California lime plant

ANOTHER ON THE SPOT REPORT

SINCE 1928, the Diamond Springs Lime Company has been an important producer - supplier of lime in northern California. Its plant at Diamond Springs, in the Mother Lode country a few miles from historic Placerville, has been in operation almost continuously during the 30-year period.*

Significantly, there have been relatively few changes in the plant flowsheet over the years due to excellent basic design, layout, and equipment choice in the first place. Burning is accomplished in a pair of 8- by 125-ft. Vulcan rotary kilns which have a combined capacity of about 15 t.p.h. of lime. A full range of quicklime and hydrate products is produced, the finely ground limes being subject to air separation.

One of the newer products which is currently in good demand is a patented high-early plasticity high-calcium hydrate which is marketed under the trade name of "Marvel." About three years ago the company erected a 2,000-lb. Madsen asphalt plant on the property, one of the few hot plants (possibly the only one) in California to utilize limestone aggregates. Because of the recognized high affinity of the stone for the bitumens, demand has been excellent for the product.

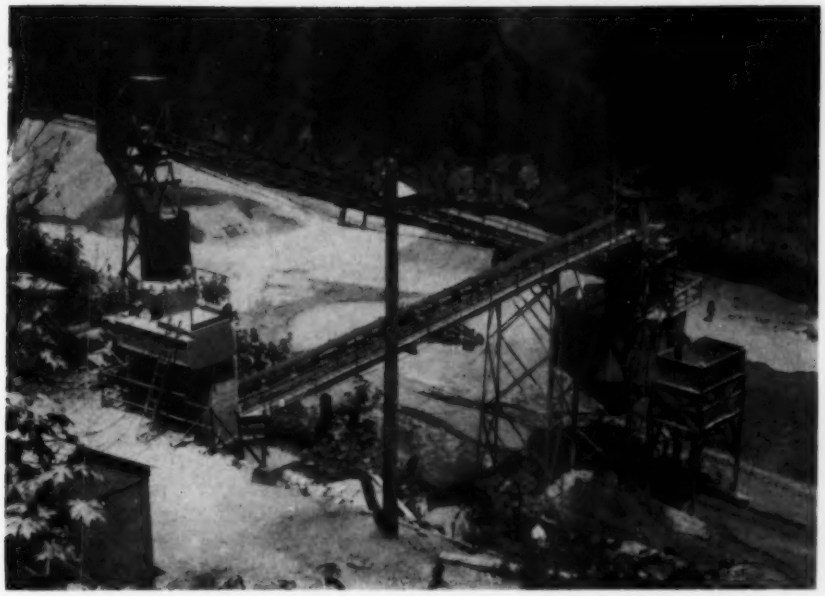
For many years all the limestone used in the Diamond Springs operations came from an open quarry near the plant. This material, after being reduced to about minus 7 in. by a primary crusher at the quarry, was transported a distance of about 3 miles to the plant by an aerial tramway. Some years ago the tramway system of transport was abandoned in favor of motor trucks in the interest of economy and flexibility, especially since the trucks are

*See PIT AND QUARRY, April 6, 1932, pp. 22-30—*Rotary Kiln Lime Plant Gets Raw Stone Over Tramway Three Miles Long.*

THE TRACTOR SHOVEL in the Diamond Springs Lime Company's mine, loading one of the haulage units which delivers to the crushing-and-screening plant at the surface.

By HARRY F. UTLEY

Haul Haul



A VIEW OF THE PLANT, taken from the portal level. The secondary crusher is at the left. The circular bin is for kiln-feed stone; the rectangular one at the right collects the minus ½-in. material.

better able to handle surge demands for stone.

While the old open quarry still supplies some raw material to the plant, Diamond Springs Lime recently opened up a new source of extremely high-grade stone at what is known as Mountain Quarries, about 4 miles east of Auburn, Calif. This deposit consists of two elongated lenses of limestone which extend in a northerly direction through the Sierran foothills. This was one of the chief sources of limestone in northern California from 1919 until 1942. It supplied the needs of the old Pacific Portland Cement Company, northern California steel makers, and sugar refineries during this period. Operations (by the glory-hole method and tram through an adit) were abandoned in 1942, peak production of 1,500 t.p.d. having been achieved with 140 men.

Today, using modern room-and-pillar mining methods and highly efficient equipment, the Diamond Springs management can approach this output figure with a crew of only 10 workmen. Three mammoth glory holes remain, each capable of containing the entire Empire State Building!

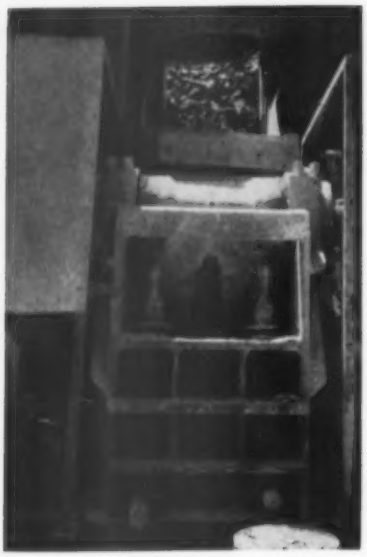
The deposit is 1¾ miles long and averages 400 ft. in width. The material ranges from partially to completely re-crystallized limestone, which is characterized by prominent jointing; it has a firm and tenacious texture, and is blue-gray in color. The stone is of exceptional purity—98 to 99 percent calcium carbonate—and its physical structure is ideal for calcining and steel manufacture.

Diamond Springs Lime Company acquired and re-activated the deposit in 1957-58. Haulage roads were constructed to allow transport of kiln-feed stone by truck to the Diamond Springs plant 30 miles distant. Direct shipments of stone are also to be made from the mainline of the Southern Pacific Railroad at Auburn. Underground development of working faces under the direction of Floyd Walker, mine superintendent, proceeded at the same time, along with the erection of surface facilities for crushing, sizing, loading, and storing the stone.

Initial production of kiln-feed stone at the time began in 1958. A modified room-and-pillar method of mining is utilized, and production of 100,000 tons is estimated for this year, with an increase to 200,000 tons annually as the indicated target. About one-half of the planned output will be eventually sold commercially, and the remainder will go to the lime plant at Diamond Springs.

The distance from the portal to the farthest load point in the adit is about 1,200 ft.; and the stone is loaded by an International TD9 tractor with a Drott skid-shovel to two Koehring WD60 Dumptors equipped with Marstan scrubbers. The main drill rig, a jumbo built in the company's own shops, utilizes a 15,000-lb. Hyster lift truck with an 8- by 10-ft. platform. Four Ingersoll-Rand 38B jack-leg drills handling 1-in. hex steel are used. The accompanying drawing shows the current drill pattern. Each 74-hole round produces about 425 tons of stone on a detonation of 210 lb. of Trojamite B. This ratio of about 2 tons of stone to a pound of powder is expected to rise to 2½:1 later on through a change in drill pattern and a powder-factor improvement.

At the portal the Dumptors discharge over a 2-in. grizzly to a receiving hopper. A 36-in. by 10-ft. Diamond feeder delivers oversize to a 24- by 36-in. Diamond jaw crusher set at about 2½ in. A 24-in. by 115-ft. Marco belt conveyor carries the product and the grizzly throughs to a 4- by 12-ft. Overstrom double-deck screen. The upper deck carries 1¾-in. mesh, and the bottom ½-in. The minus ½-in. take-out at the



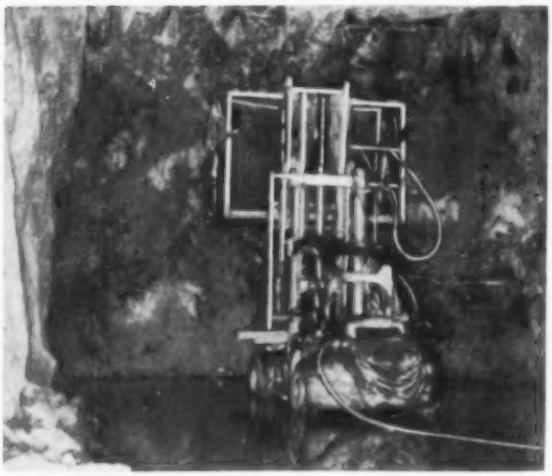
ABOVE: Stone is reduced to minus 2½-in. by this jaw crusher.

screen drops to a 100-ton truck-loading bin and is then stockpiled. Later on some of these fines may be separated to permit possible use of the coarser chips as a blend in the kiln feed, although the present size limit of kiln-feed stone is plus ½ in. minus 2 in., retained on the lower screen deck. Top-deck rejects are carried back by a 24-in. by 105-ft. Marco belt conveyor to the secondary crusher, an Allis-Chalmers No. 636 HydroCone, in closed circuit with the conveyor feeding the screen. A 150-ton truck-loading bin normally loads out the kiln-feed stone to the trucks, and surplus is held in open storage.

A 287-ft. drill hole was put down through solid rock to a point in the adit about 1,200 ft. from the portal to carry power lines to the 30-hp., 70,000 c.f.m. Joy Axivane ventilation fan. The largest motor in use at the mine is a 225-hp. synchronous unit which powers a Worthington stationary compressor.

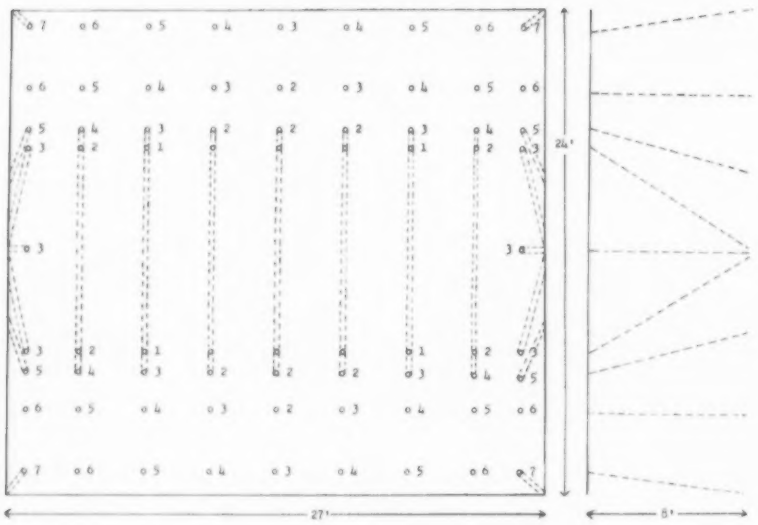
Ralph S. Locke is president of the Diamond Springs Lime Co.; P. A. Fout is vice-president and secretary; and W. E. Flynn is treasurer. Herbert C. Green is general superintendent; R. B. Lawson, product manager; and E. P. Graham, sales manager.

On the trip from the mine to the lime plant, the delivery trucks traverse State Highway 49 and pass the site of Sutter's Mill at Coloma, where gold was discovered more than a century ago. The Mother Lode has long since given up its wealth of the yellow metal, and it is no longer true that "thar's gold in them thar hills." But there are millions of tons of the highest grade of limestone which is helping to build a greater and growing California.



RIGHT: This drilling jumbo, mounted on a fork lift-truck, was built in the company's own shop.

BELOW: This drawing shows the drill pattern employed at the new mine. Each round produces approximately 425 tons of rock.



Japanese Firm to Import Danish Cement Machinery

The Ministry of International Trade and Industry in Japan recently approved plans of the Nozawa Asbestos and Cement Company to import equipment from Denmark for producing 1,000 tons of cement a day. The approval was given despite bitter opposition from Japanese machinery manufacturers.

The government agency assured the manufacturers that this would not constitute a precedent for allowing other large-scale machinery imports, but was approved only to correct an imbalance in trade between the two countries.

According to reports that domestic fabricators of mica filed with the U. S. Bureau of Mines, 1,473,000 lb. of block and film mica were fabricated during the second half of 1958. This was 6 percent more than in the first half of 1958 (1,384,000 lb.), but 14 percent less than in the last half of 1957. Fabrication of muscovite ruby and nonruby block and film mica totaled 1,468,000 lb., of which 98 percent was block mica.

The new sand-processing department which makes two product sizes from sluiced-down material.

By HARRY F. UTLEY

Stoneway STEPS UP Output To Supply In-Plant Needs

ONE of the pioneer aggregates and commercial concrete producers in the Seattle area is the Stoneway Sand & Gravel Company of suburban Renton, Wash. Its operation, established in 1927, is interesting, principally because it obtains its raw material from the bed of the Cedar River, as well as from a glacial hill deposit 200 ft. above the river-level processing plant. Deficiencies in one deposit are made up in the other to keep the pit-run supply in balance. (See PIT & QUARRY, July, 1956, p. 184.)

Recently a program of expansion and improvement was undertaken to step up aggregate production to about 200 t.p.h. and to improve sand processing. The changes were dictated largely by in-plant demand following the erection of the company's second ready mixed concrete plant, plus the installation of concrete products and hot-mix asphalt plants on the premises. Both ready-mix plants are operated and owned by the Stoneway firm; however, the hot plant is a separate facility owned by the Rainier Asphalt Paving Company. The products plant, which turns out concrete pipe, septic tanks, etc., is owned and operated by Superior Cement Products Company. All sand and necessary coarse aggregates are, of course, supplied by the Stoneway company. Probably 75 percent of the total sand-and-gravel output is utilized on the premises by these plants.

Both concrete and fine sands are now processed, the hill deposit supplying the required material. A glory hole on the hilltop acts as a receiving hopper for the pit trucks; and as the material is discharged into the hole, a large volume of water is added to sluice the supply downhill by gravity. Gravels are taken out by a set of screens at the

(*Continued on page* 124)

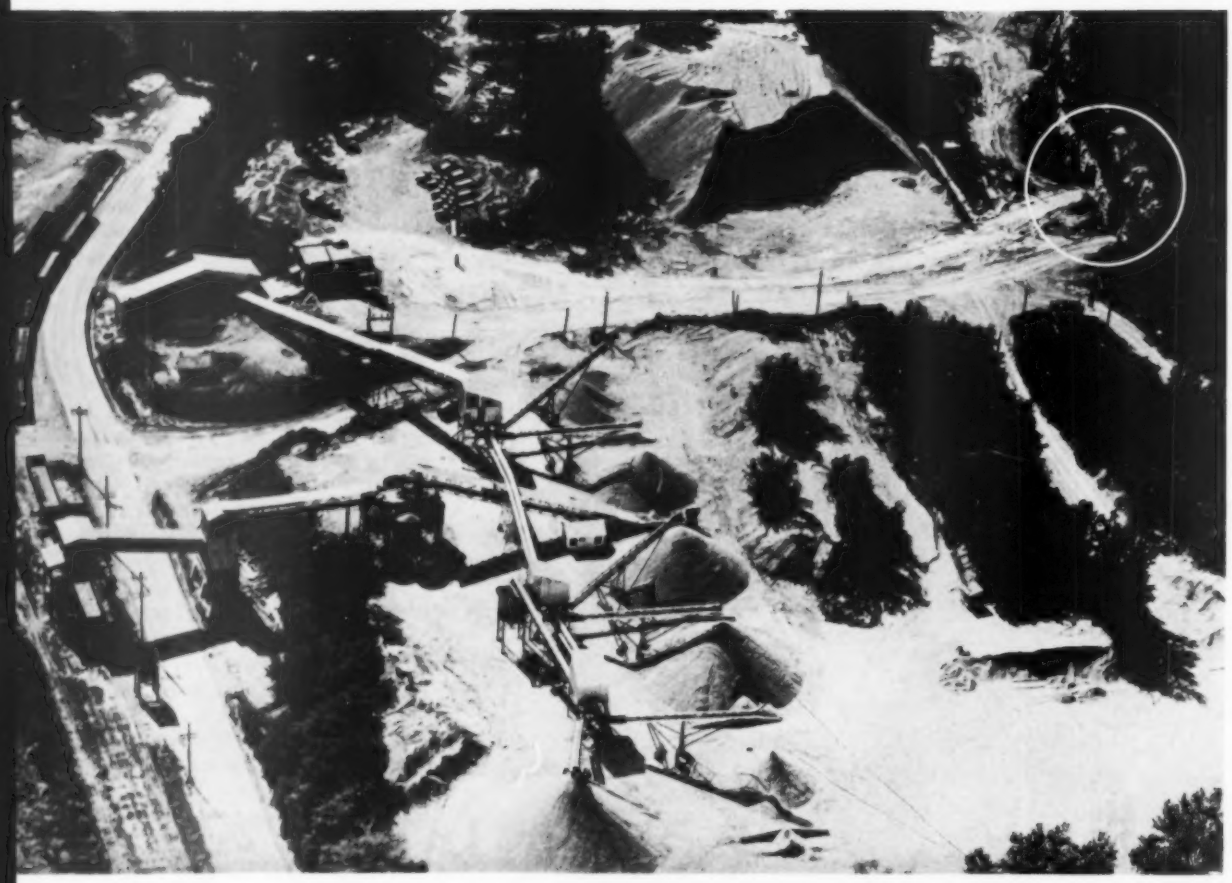
The water scalper and two dewatering screws which make concrete and fine sands.

By L. ASEL
Engineer, Stewart Sand & Gravel Co.
Kansas City, Mo.

and

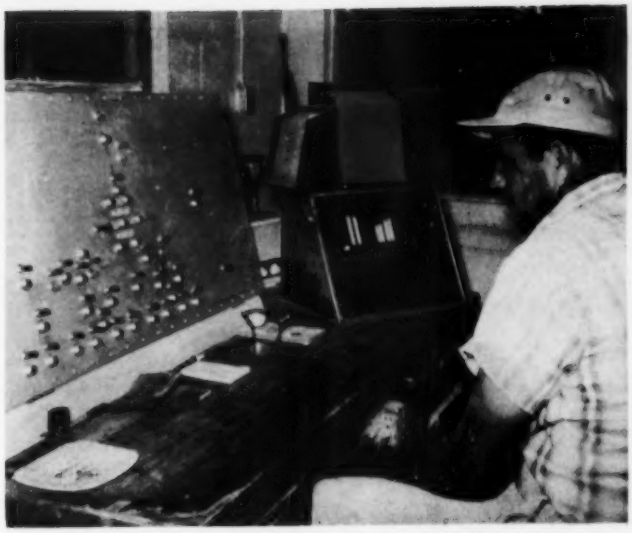
K. O. PLACHE
Allis-Chalmers Mfg. Co.
Kansas City District Office

REDESIGN results in and **QUALITY CONTROL** at Stewart



NEW PLANT built for Stewart Sand and Material Company can easily produce any gradation specification. Flexibility is gained through separate screening houses and surge piles with a reclaiming belt below. Central conveyor, fed by reclaiming belt, carries desired specification stone to truck-loading and rail facilities. Note the mine openings (circled, extreme right).

CENTRAL CONTROL PANEL permits one man to control the entire plant operation from one location. At a glance, the operator can determine screen and conveyor operation, position of rotating conveyor supplying the truck loading-out hoppers, amount of material in loading-out bins, and can see which reclaiming clamshell gates are open.



FLEXIBILITY

Sand & Material

ON February 18, 1958, the Stewart Sand & Material Company suffered a disastrous fire at its crushed stone plant at Independence, Mo. The fire started and was pretty well contained in the old wooden screen house originally constructed in the 1920's. Storage bins located beneath the screens, the building, and all equipment contained in it were destroyed, and the plant was shut down completely.

Rising out of the ruins of this fire, the new stone crushing plant erected by the company is the most modern in the area. It was designed and built under the supervision of the company's chief engineer, Henry J. Gish.

Operations Quickly Resumed

Stewart Sand & Material Co. is one of the largest producers of ready mixed concrete in the Kansas City area, requiring considerable tonnage of concrete aggregate for its ready-mix plants. Aggregate is also shipped for state highway and Corps of Engineers construction projects.

To enable the company to fill orders on hand and continue service to its trade territory, a portable crushing and screening plant was brought in. Operating this portable plant and at the same time conducting clean-up operations and preparing for construction of the new plant required the entire plant personnel, and lay-offs were unnecessary.

The old plant had a maximum capacity of 270 input t.p.h.; it crushed limestone from the Bethany Falls Ledge to produce a maximum 2-in. size down to agricultural limestone. The installation met most specifications, but its obsolescence and inflexibility were becoming more and more evident each year. Compactness made it difficult to add equipment necessary to turn out new product sizes and ranges. Storage bins under the screenhouses afforded inadequate storage area, and it was

OLD PLANT, destroyed by the fire, was inflexible and without adequate storage and expansion capabilities.

REVOLVING CONVEYOR swings about a center pin to feed any of the six 100-ton truck loading-out hoppers. This conveyor can also feed another conveyor supplying railroad loading facilities.

difficult to reblend large quantities of sized material. Because the plant was old, it required a great deal of maintenance.

Lessons from Former Operations

After the fire, management was immediately faced with the problem of designing and engineering a new plant. The objectives of this new design were flexibility, outstanding blending capabilities, easy and adequate loading facilities, and minimum operating personnel. Disadvantages of the old plant were thoroughly taken into consideration and eliminated wherever possible.

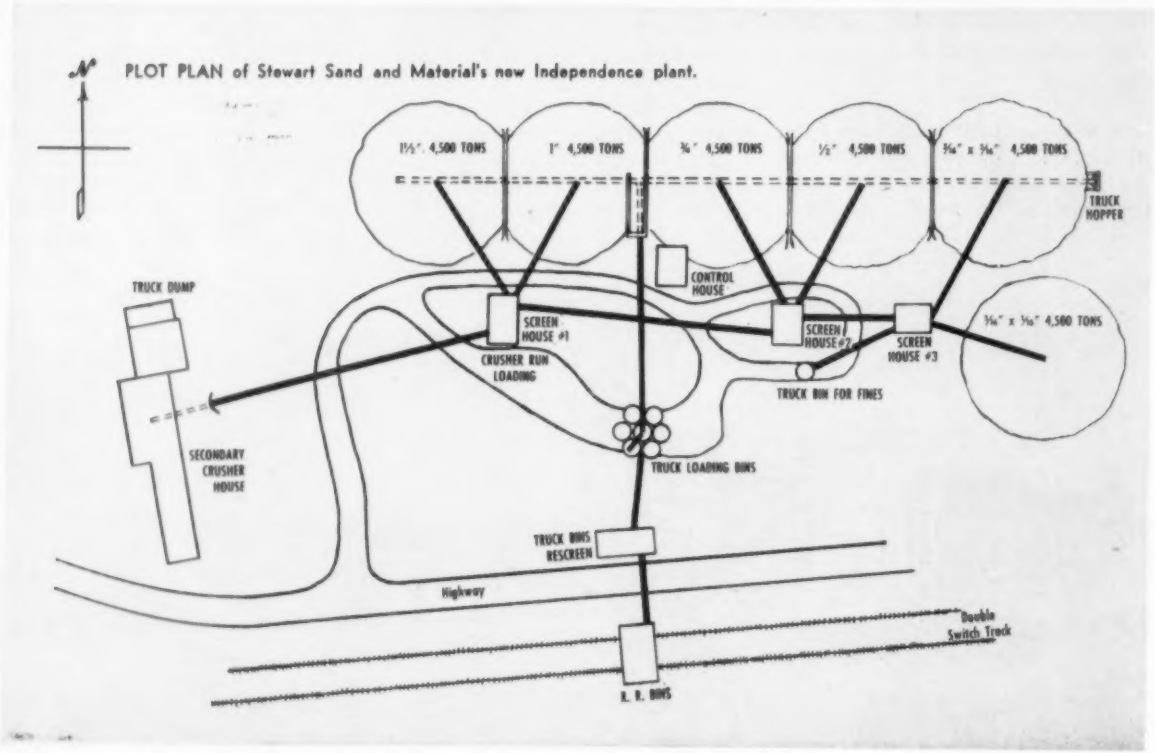
Intensive study and evaluation produced the improved flow here described, which permits meeting any gradation or specification in an economical manner. As a result of this planning, the completed plant is the most flexible in this area.

Entrance to the mine is less than one-quarter mile from the primary crusher. The present mine face, however, is approximately one mile from the crusher. Rock is hauled from the mine in side-dump trucks to a 20-in. Superior McCully gyratory crusher, which is followed by two secondary gyratory crushers in closed circuit with a vibrating screen.

From the crusher, the material is conveyed approximately 150 ft. to the No. 1 screenhouse, where the 1½- and 1-in. fractions are separated on a 6- by 14-ft. double-deck Ripl-Flo screen and carried by conveyors to stockpiles.

Minus ¾-in. to 0 material is conveyed to the No. 2 screenhouse, which contains a 6- by 16-ft. double-deck Ripl-Flo screen. The

(*Continued on page* 123)

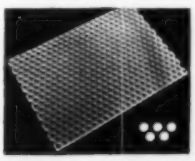


Enter 121 on card, page 167 ➔

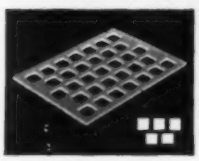
Cross HEXCREENS*

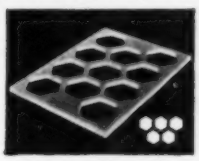
process 100,000 tons of stone without significant wear

In the unretouched photo above you see the actual sections of CROSS Hexcreen that have screened over 100,000 tons of crushed stone for a leading Pennsylvania firm. Six sizes of Hexcreen—ranging from 9/32" to 4 1/16" hexagon holes (1/4" and 3 3/4" equivalent square openings)—are used in this triple-deck vibrator. The reason... hexagon-shaped holes provide uniform sizing and maximum capacity, and CROSS Special Analysis Steel gives long service.



CROSS makes a complete line of perforated screens to fit every need





This is another example of the cost savings and improved performance you get with CROSS Perforated Screens. They're rigid one-piece units—no stretch, no loss of screen tension. You save on down-time costs, too, because screen adjustments and reshaping are eliminated.

CROSS PERFORATED SCREENS are available in a wide range of sizes with uniformly spaced square, round and hexagon perforations, staggered for increased capacity and efficiency. For additional information on CROSS Screens for shakers, vibrators and revolving screens, write CROSS PERFORATED METALS, National-Standard Company, Carbondale, Pa.

*Trade Mark

CROSS Perforated Metals

Carbondale, Pa.

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FAST? HANG ON TO YOUR HAT!

SPEED makes the Bucyrus-Erie 22-B shovel king of the sidebank operation! Take a good look and see how and why!

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BUCYRUS ERIE®

BUILDS BETTER EQUIPMENT

Stewart Sand & Material

(*Continued from page* 120)

latter separates the ¾- and the ½-in. fractions and conveys them to stockpiles.

Agricultural lime, 5/16-in. buckshot, and 3/16-in. buckshot are separated in screenhouse No. 3, which contains a 6- by 16-ft. Ripl-Flo screen. The No. 10 mesh cloth on the bottom deck of this screen tended to blind because of approximately 2 percent moisture in the material; so a heated deck was installed to remedy this situation. All screens are air-spring mounted for maximum vibration isolation.

Varying the pressure in each of the individual air springs made it easy to level these screens and keep them level, thus keeping material uniform across the width of the screen. Spare parts stock has been reduced because the new screens use air springs of the same size.

The supporting structure for the new screens was simpler and more economical to build than the old cable-supported screens.

Reclaiming Conveyor Beneath Stockpiles

Each of the stockpiles in the improved plant flow is 37 ft. high by 90 ft. in diameter and has a capacity of approximately 4,500 tons. Of the total 4,500 tons, approximately 1,500 tons are reclaimable without additional material-handling units.

A 6-ft. 6-in. square concrete tunnel 433 ft. long containing a 24-in. reclaiming belt conveyor runs beneath five of the six stockpiles. Material is fed onto the reclaiming belt through air-operated, electrically-controlled clamshell gates.

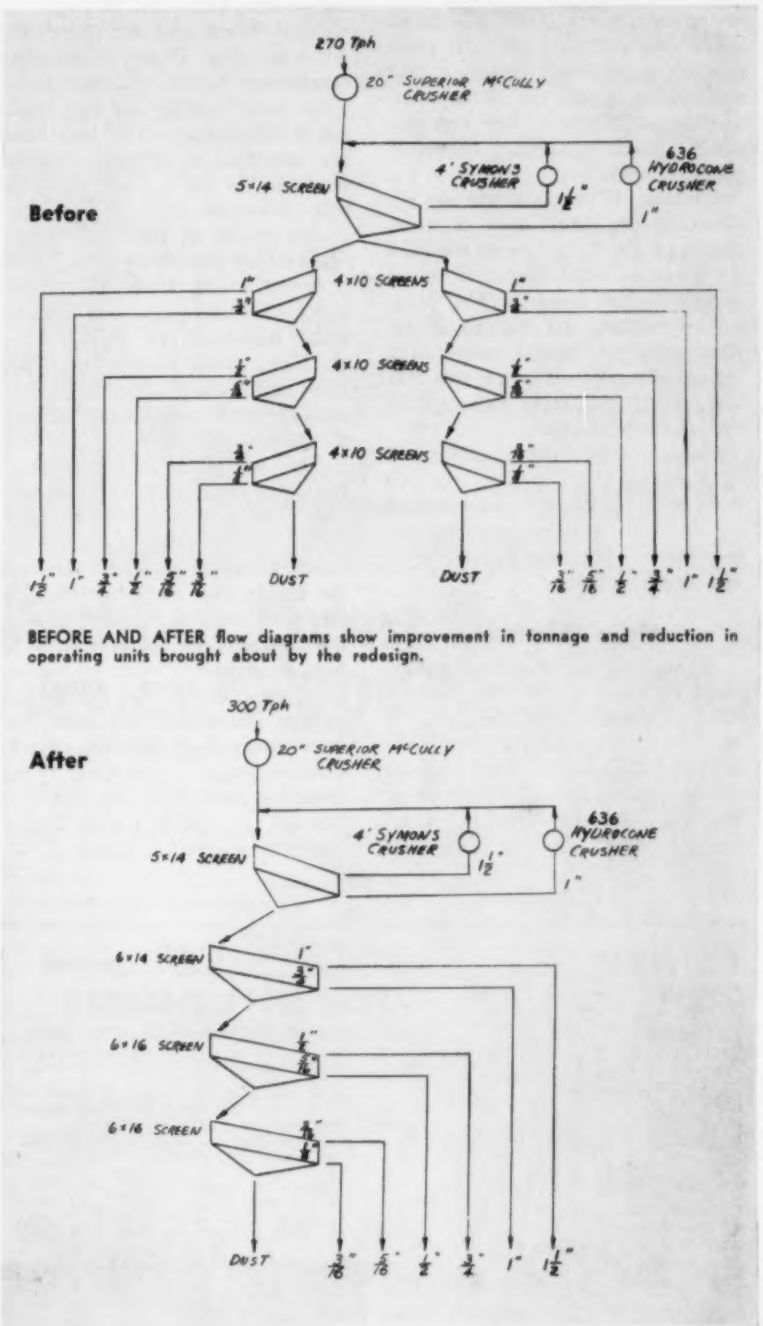
At this point a very simple but effective device for pre-determining the opening of the clamshell gate is used. Travel or opening of the gate is limited by the use of a common automobile scissor jack installed as a gate stop. This arrangement allows an infinite variation of gate openings, from closed to fully open. By predetermined settings on this stop, proper proportions of each size of material can be blended to meet any gradation specification desired.

A truck dump hopper with a manually controlled gate installed at one end of the reclaiming tunnel provides a handy means for blending or loading out miscellaneous sizes stored in the yard.

From the reclaiming conveyors, the sized or blended stone is fed onto a 30-in. inclined belt conveyor to a short revolving conveyor that swings about a center pin, to feed any one of six 100-ton loading-out hoppers. The revolving conveyor can also feed another conveyor leading to railroad loading-out facilities. For removal of fines, this material passes over a 5- by 10-ft. single-deck Ripl-Flo screen, also mounted on air springs.

Central Panel Provides True Control

To knit together this widely spread operation and to keep personnel to



BEFORE AND AFTER flow diagrams show improvement in tonnage and reduction in operating units brought about by the redesign.

the minimum, a single control panel was installed in a centrally located house.

One man controls the entire plant from this spot. He can start and stop all screens and all conveyors; he can position the rotating conveyor to the correct hopper; and he can open and close the clamshell gates under the stockpiles. The control panel contains a pilot light for each piece of equipment. Thus, the operator, at a quick glance, can determine which of the screens and conveyors are in operation; he can observe the position of the rotating conveyor and the amount of material in the truck loading-out hoppers, and can see which of the reclaiming clamshell gates are open.

By June, 1958, operation was resumed at the plant, with an initial output of 250 t.p.h. During the next six months, with operation under supervision of Ernst Childs, plant superintendent, and William Bugg, plant manager, hourly output was increased to an average of over 300 tons, with appreciable reduction in the total work force.

Centralized control, advanced equipment design, large reclaimable stockpiles, plenty of room for easy expansion, and minimum labor requirements have made this a flexible and modern plant.

Major Equipment

A list of the major items of equipment installed at the new Stewart Sand Material plant follows: 1 Markry drill; 1 Marion shovel (1-cu. yd.); 18-ton Easton trucks; 20-in. Allis-Chalmers (Superior McCully) primary crusher; Allis-Chalmers vibrating screens and front-end loaders; secondary crushers—4-ft. Symons cone (Nordberg) and 36-in. Hydrocone (Allis-Chalmers); and Barber-Greene conveyors. The structural design was by Donald Workman & Associates.

Stoneway Steps Up Output

(*Continued from page* 117)

sluice-bottom station for processing in the riverside crushing-and-screening plant. The sand throughs are cleaned, sized, and dewatered in a newly-installed Eagle classification department which includes an 8-spout water scalper and two single-screw dewaterers. The two sands are delivered to a compartmented load-out bin by a pair of parallel belt conveyors.

The gravel-crushing and screening-washing department has undergone no major change in the four years since the plant was first visited. Kue-Ken jaw and gyratory machines make the crushed materials, and sizing and washing are accomplished over Cedarapids and Simplicity screens.

The second concrete plant, a fully-automatic Noble installation, which has a 6-cu. yd. Smith tilting mixer, was erected alongside the existing ready-mix plant. Each of the plants can batch directly into the truck-mixers, or can pre-mix the concrete; the older installation has a smaller, 2-cu. yd. mixer. Building codes in the Seattle area require pre-mixing for most concrete work. Aggregate bins over the concrete plants are supplied by separate belt conveyors. The conveyors are fed by dump trucks through underground feed hoppers.

The dispatcher writes a concrete order for transmission to the plant by electronic longhand.

The Stoneway fleet of truck-mixers has grown from 19 to 30 during the last four years and includes Challenge, Rex, and TransCrete units of various capacities and mounted mostly on International truck chassis. Communcation between the fleet and the dispatcher is constantly maintained by R.C.A. 2-way radio, while batch and order data are transmitted to the concrete plants and recorded by TelAutograph electronic longhand.

L. J. Dowell is president and general manager of the Stoneway Sand & Gravel Co.

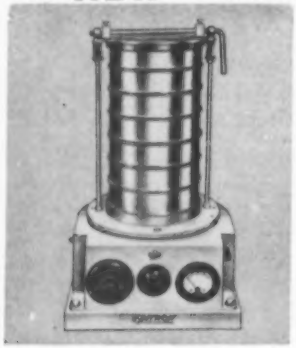
The Tyrone Lime & Stone Company plant at Stover, Pa., including property, equipment, and machinery, has been sold to Narehood Bros., Inc., of Milton, Pa. Stockholders of the selling corporation are Mrs. Lenita G. Vanneman, president, Robert B. Garman, vice-president and general manager, and Miss Belle Bookhamer, secretary-treasurer.

India will supply increased quantities of cement to Pakistan as a result of the Indo-Pakistan Trade Relief Conference which ended in New Delhi on July 27, 1959. At Pakistan's suggestion, India will supply 50,000 tons of cement for East Pakistan by rail at competitive prices. India has an exportable cement surplus.

The **NEW** double action SYNTRON VIBRATING

TEST SIEVE SHAKERS

produce uniform, dependable analyses, faster



SYNTRON'S New Electromagnetic Sieve Shakers provide a double action—both vertical and rotating— for faster, more accurate analysis.
They are easy to operate and the absence of mechanical wearing parts assures dependability and low maintenance

SYNTRON TEST SIEVE SHAKERS FEATURE:

- Double action electromagnetic drive—3600 controllable vibrations per minute.
- Rheostat voltage control
- Reset timer for accurate time testing

Each SNYTRON Test Sieve Shaker will accomodate up to 6 standard 8 inch test sieves and bottom pan.
Operation from 115 volt, 60 cycle a-c (230 volt to order)

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7 Years Without Overhaul— Using Cities Service C-300 Motor Oil!

Only 1 quart of makeup oil every 100 hrs.!

The performance cited for this truck, using Cities Service C-300 Motor Oil, is not the random guesswork or wishful thinking of an optimistic maintenance supervisor.

At Interstate Sand & Gravel Company, this performance is a matter of record, carefully detailed under one of the finest systems of preventive maintenance in the sand and gravel business.

This painstaking records system and the outstanding performance it reveals is one of the compelling reasons why Interstate has relied exclusively upon Cities Service products for all lubrication during the past ten years.

Far from an isolated case, the truck above actually typifies the type of results Interstate has achieved with all of its equipment. Take the 2½-yard dragline in the picture, for example. Using Cities Service C-300 Motor Oil, this workhorse has piled up over eight years with no major overhaul required or anticipated!

If you're searching for an oil that is more than equal to prolonged heavy duty service . . . an oil that can be used in virtually *all* your diesel and gasolene engines . . . and above all, an oil that is competitively priced . . . get the facts about Cities Service C-300. Talk with a Cities Service Lubrication Engineer from the nearest office. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

Founded in 1903, Interstate has been working the same rich deposit since 1906. The deposit covers 450 acres and runs about 40 feet deep. Plant modernization after World War II brought switch to Cities Service Lubricants.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Kentucky *fly ash plant* serves lock and dam projects

PRODUCTION, handling, and utilization of fly ash in concrete were highlighted in a recent tour organized and sponsored by the Walter N. Handy Company, Inc. Contractor personnel concerned with lock and dam construction on the Ohio River and its tributaries, and representatives of the Corps of Engineers visited the Louisville, Ky., power plant where fly ash is being produced, the new handling and storage facilities of the Handy Company near the power plant, and a project involving placement of fly ash concrete.

Construction of the Handy installation followed authorization by the Corps of Engineers of optional use of fly ash in concrete after that group had conducted exhaustive laboratory tests and developed its own specifications. In addition to physical and chemical requirements, specifications require that fly ash be stored in weather-tight bins for the duration of certain test periods.

In co-operation with the Louisville Gas and Electric Company, the Handy organization installed four 900-ton Butler steel storage bins at the utility's Cane Run power plant. Equipment to transfer fly ash 600 ft. from the power plant to storage and from storage to the loading station includes a pneumatic transport system, a compressor, blowers, and a bucket elevator.

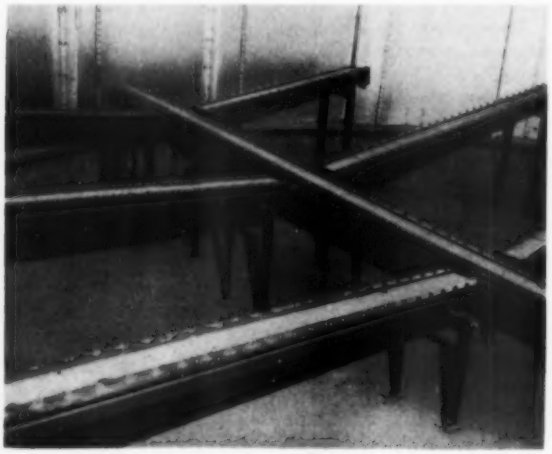
Sampling for the Corps of Engineers acceptance tests is done automatically while the pneumatic pump is being charged. From each charge of about two tons entering the pump, a sampler extracts about two spoonsful. Separate samples representing each 100 tons are sent to a Corps laboratory. Approved fly ash —to date all material has passed specifications by a substantial margin—is then loaded into 20-ton bulk material trucks, or railroad hopper cars for delivery to construction sites.

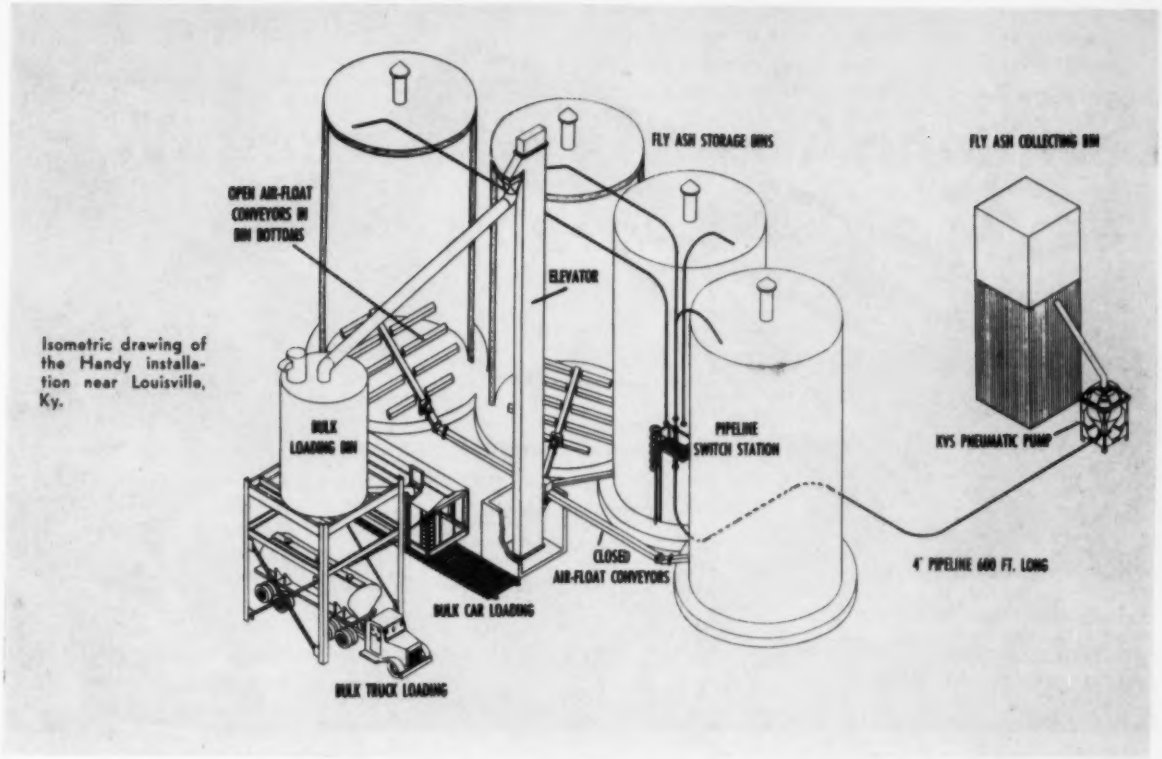
As produced in the power plant, the fly ash is transferred to an adjoining collecting bin. Below the latter is a bagging station in which some of the material is packaged. Most of it, however, is discharged to a Kennedy-Van Saun automatic pump for the pneumatic conveying system. Air for the system is provided by a single-cylinder Worthington type HB compressor. In a repeating cycle, the pump delivers aerated fly ash through a 4-in. line to a switch station from which four storage bins are supplied.

The Butler bins, of bolted steel plate construction, are equipped at the bottom with 6-in. open type K-VS Air Float conveyors. Material drawn from a particular bin *via* these conveyors enters a 6-in. closed type Air Float unit in which it is

Left: The pumping installation adjoins the power plant from which the fly ash is obtained. Material flows by gravity from the collecting bin to the pump, left, and is delivered to the four storage bins.

An interior view of one of the storage bins, showing the open type air-gravity conveyors on the bottom.





Isometric drawing of the Handy installation near Louisville, Ky.

transferred to the boot of a 78-ft. Chain Belt Rex bucket elevator.

The fly ash is then raised to a feed pipe supplying the 60-ton bulk loading bin. This bin, also of bolted construction, has a conical bottom, and discharges by gravity to the loading pipes for truck or rail units. Air for the bin recovery conveyors is supplied by a pair of Roots-Connersville blowers — one delivering 487 c.f.m. at 5 p.s.i., and the other 130 c.f.m. at 1 p.s.i. When filled, each of the 900-ton tanks is sealed until the Corps of Engineers has completed specification testing.

All conveying equipment is reported by Handy officials to be operating well above design figures. Approximately 25 percent more fly ash is being handled than expected in normal operations.

Concreting operations were started by the Hardaway Construction Company, prime contractor on the Louisville lock, late in April. Fly ash for concrete in this project is delivered to a central mix plant set up at the construction site. It is expected that this job alone will require about 15,000 tons of fly ash over a two-year period.

Although this is not the first Corps of Engineers project to utilize fly ash concrete, it was the first experience for many of the construction personnel. Likewise, construction crews on other contracts to be supplied from the Handy plant were unfamiliar with use of the material. The tour therefore provided an understanding of fly ash handling and applications.

The bucket elevator transfers fly ash from the bin recovery conveyor system below the four bins to the rail- and truck-loading bin at the right.

New Model PS-70 Portable Screening Plant is available in sizes for every screening requirement. Write for literature.

High capacities . . . the ultimate in portability

NEW BARBER-GREENE SCREENING PLANT

Here's the all-new Barber-Greene Model PS-70 Portable Screening Plant, which gives high capacities and the ultimate in portability at lowest cost. It is the ideal means of producing sized aggregates for all types of construction work. Because the plant screens while it loads, it allows the two operations to be performed simultaneously, thus effecting a considerable saving in both time and expense.

The plant offers many advantages which increase production and cut costs:

Capacity for every requirement. Wide choice of belt widths and screen sizes allows selection of the proper size plant for every screening requirement.

The ultimate in portability. Entire plant, including hopper or trap, is readily towed from job to job without disassembly. Screen is merely folded under conveyor for travel. Large, single pneumatic tires; rugged axle and truck, and convenient towing hitch allow high-speed towing.

New, highly efficient screen. Designed and built exclusively for screening plant service, the screen offers exclusive Vibra-Spring suspension, which decreases resistance to vibration, increases spring life and assures top screening capacities. Push-arms extending from conveyor support screen and make ground supports unnecessary.

Rugged portable conveyor. The portable conveyor has all the features of ruggedness, dependability, portability and high capacity for which Barber-Greene Portables are famous.

Plus — simple boom hoist with positive lock . . . easily accessible clutch lever for accurate control of entire operation . . . low-maintenance drive . . . high-capacity feeder . . . interchangeable trap and hopper . . . wide selection of accessories.

Write for new bulletin which describes many other features. 59-3-PO

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Winning Operations Announced

In 1958 N.C.S.A.-Mines Bureau Safety Contest

THIRTY-THREE crushed stone plants will receive awards from the National Crushed Stone Association in recognition of their outstanding safety performance during the 1958 Safety Contest, conducted annually by the U.S. Bureau of Mines. This safety contest is designed to stimulate crushed stone producers, through recognition of plants without disabling work injuries, to take greater interest in developing, implementing, and carrying on more effective accident-prevention programs. Although conducted by the Bureau of Mines, it is sponsored by the National Crushed Stone Assn. To enroll a plant in the Bureau of Mines-N.C.S.A. safety contest, apply to the Branch of Accident Analysis, Div. of Safety, Bureau of Mines, Washington 25, D. C.

The same rules and the same reports are used in both the Bureau's National Safety Competition and that of the National Crushed Stone Association Contest. There are two additional qualifications, however, for the latter contest: the company must be a member of N.C.S.A. and it must produce crushed stone for commercial use.

All eligible plants, regardless of the number of operating days or man-hours worked, completing the first contest year without a disabling work injury, will receive the National Crushed Stone Association Safety Award.

The plant with the longest injury-free period of operating time will receive the *Explosives Engineer* bronze plaque portraying in bas-relief the quarrying scene on the pedestal of the "Sentinels of Safety" trophy awarded in the National Safety Competition. The presentation will be made in the 1960 N.C.S.A. convention in Chicago.

For purposes of making awards, the contest is divided into five man-hour groups, namely: Group I, plants working 200,000 or more; Group II, 100,000 to 200,000; Group III, 50,000 to 100,000; Group IV, 30,000 to 50,000; and Group V, 30,000 or less.

Injury-Free Operations

There were 33 operations, 28 quarries and 5 underground mines, that achieved perfect safety records during the 1958 competitive year. These injury-free operations were awarded the National Crushed Stone Association Safety Award and each employee of each operation received an individual certificate inscribed with his name, the company name, and the year in which the record was established. These 33 plants were worked 2,415,566 man-hours representing 29 percent of the total worktime of all plants enrolled in the contest.

These 33 winning plants, each of which operated throughout 1958 with no disabling work injuries are classified into their respective man-hour groups, as follows:

Group I—Plants Working 200,000 to 500,000 Man-Hours

Clinton Point Quarry, New Hamburg, N. Y., operated by New York Trap Rock Corporation—336,330 man-hours (group award winner)

Krause No. 1 Quarry, Columbia, Ill., operated by Columbia Quarry Company—233,316 man-hours

Tomkins Cove Quarry, Tomkins Cove, N. Y., operated by New York Trap Rock Corporation—219,359 man-hours

Group II—Plants Working 100,000 to 200,000 Man-Hours

North Branford No. 7 Quarry, North Branford, Conn., operated by New Haven Trap Rock Company — 144,331 man-hours (group award winner)

Dan Quarry, Martinez, Ga., operated by Superior Stone Company — 137,346 man-hours

Downington Quarry, Downington, Pa., operated by Bradford Hills Quarry, Incorporated—114,233 man-hours

Pixley Underground Mine, Independence, Mo., operated by Stewart Sand and Material Company—106,649 man-hours

Group III—Plants Working 50,000 to 100,000 Man-Hours

Woodleaf Quarry, Woodleaf, N. C., operated by Superior Stone Company—95,203 man-hours (group award winner)

Watertown Quarry, Watertown, N. Y., operated by The General Crushed Stone Company—81,878 man-hours

Kimballton Underground Mine, Kimballton, Va., operated by The Standard Lime and Cement Company — 80,680 man-hours

Rock Cut Quarry, Jamesville, N. Y., operated by The General Crushed Stone Company—68,657 man-hours

McLeansville Quarry, McLeansville, N. C., operated by Superior Stone Company—62,920 man-hours

Wallingford No. 1 Quarry, Wallingford, Conn., operated by New Haven Trap Rock Company—62,124 man-hours

Pleasant Gap Underground Mine, Pleasant Gap, Pa., operated by The Standard Lime and Cement Company—60,586 man-hours

Cape Girardeau Quarry, Cape Girardeau, Mo., operated by The Federal Materials Company—57,032 man-hours

Group IV—Plants Working 30,000 to 50,000 Man-Hours

Hickory Quarry, Hickory, N. C., operated by Superior Stone Company—47,718 man-hours (group award winner)

Cape Girardeau Underground Mine, Cape Girardeau, Mo., operated by The Federal Materials Company — 46,968 man-hours

Jordanville Quarry, Jordanville, N. Y., operated by The General Crushed Stone Company—46,777 man-hours

Rock Hill Quarry, Quakertown, Pa., operated by The General Crushed Stone Company—43,998 man-hours

Plainville No. 4 Quarry, Plainville, Conn., operated by New Haven Trap Rock Company—38,457 man-hours

Hales Corner Quarry, Hales Corner, Wis., operated by Consumers Company—38,422 man-hours

Ashland Quarry, Ashland, Mass., operated by B. and M. Crushed Stone Corporation—34,918 man-hours

Tyrone Underground Mine, Lawrenceburg, Ky., operated by The Kentucky Stone Company, Incorporated — 33,389 man-hours

Big Horn Quarry, Warren, Mont., operated by Weaver Construction Company—32,652 man-hours

Rapid City Quarry, Rapid City S. D., operated by Pete Lien and Sons—30,932 man-hours

Group V—Plants Working 30,000 Man-Hours or Less

White Haven Quarry, White Haven, Pa., operated by The General Crushed Stone Company — 28,222 man-hours (group award winner)

Buckland Quarry, Buckland, Ohio, operated by The National Lime and Stone Company—26,400 man-hours

Cairo Quarry, Cairo, N. Y., operated by Catskill Mountain Stone Corporation —23,000 man-hours

Knoxville Quarry, Knoxville, Tenn., operated by The Standard Lime and Cement Company—22,672 man-hours

Newport Quarry, Newport, Pa., operated by Bradford Hills Quarry, Incorporated—19,762 man-hours

Rimer Quarry, Rimer, Ohio, operated by The National Lime and Stone Company—16,800 man-hours

Plant No. 4 Quarry, Knippa, Tex., operated by Southwest Stone Company—12,195 man-hours

Randville Quarry, Randville, Mich., operated by Superior Rock Products Company—11,640 man-hours

Group Winners

In each group the plant with the highest number of man-hours without a disabling work injury is considered the group winner and will receive from the Association a plaque with a bar inscribed "Group Winner" and indicating the number of man-hours worked and the year in which the record was made. The group winners are as follows:

Group 1—Clinton Point Quarry, New York Trap Rock Corporation

Group 2 — North Branford No. 7 Quarry, New Haven Trap Rock Company

Group 3 — Woodleaf Quarry, Superior Stone Company

Group 4 — Hickory Quarry, Superior Stone Company

Group 5—White Haven Quarry, The General Crushed Stone Company

Statistics of the Competition

The overall injury experience at the 97 crushed-stone operations participating in the 1958 contest was not favorable. The injury-severity rate of 6,360.301 days lost per 1,000,000 man-hours of exposure-to-hazard was the highest for any crushed stone contest since 1947. The high severity rates in 1947 and 1958 resulted from the large number of fatalities reported in those years. In 1947, 10 injuries resulted in death and in 1958, 8. In 1958 there were 5 permanent partial and 168 temporary total injuries at enrolled plants.

The frequency rate for all competing plants in 1958 was 21.516 per 1,000,000 man-hours. This rate was also less favorable than that of 18.458 for 1957 but more favorable than the overall frequency rate of 27.125 for the 33 years of the contest. The 1958 injury-frequency rate showed a decrease of 21 percent from the corresponding 33-year average rate.

Of the 97 enrolled plants in the 1958 contest, 84 were quarries and 13 were underground mines. The 84 quarries experienced a total of 158 injuries, of which 6 were fatal, 5 permanent partial, and 147 temporary total. The injury-severity rate of 5,385.840 for these injuries was 438 percent higher than the corresponding rate of 1,001.150 for 1957, and 13 percent higher than the overall rate of 4,763.592 for the 33 years of the contest.

In the underground mines enrolled in the 1958 contest there were 2 fatal and 21 temporary total injuries. The injury-severity rate increased from 1,867.127 in 1957 to 15,590.456 in 1958.

Causes of Injuries

Principal causes of injury among the 1958 competing participants were as follows: falls of persons resulting in 30 injuries or 16.6 percent of all injuries; handling materials, resulting in 14.4 percent; machinery, 12.1 percent; and haulage, 11.7 percent. The most severe injuries during the 1958 contest resulted from haulage, falls and slides of rock, machinery, falling objects, and other causes.

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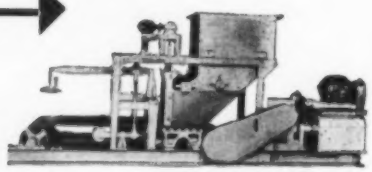

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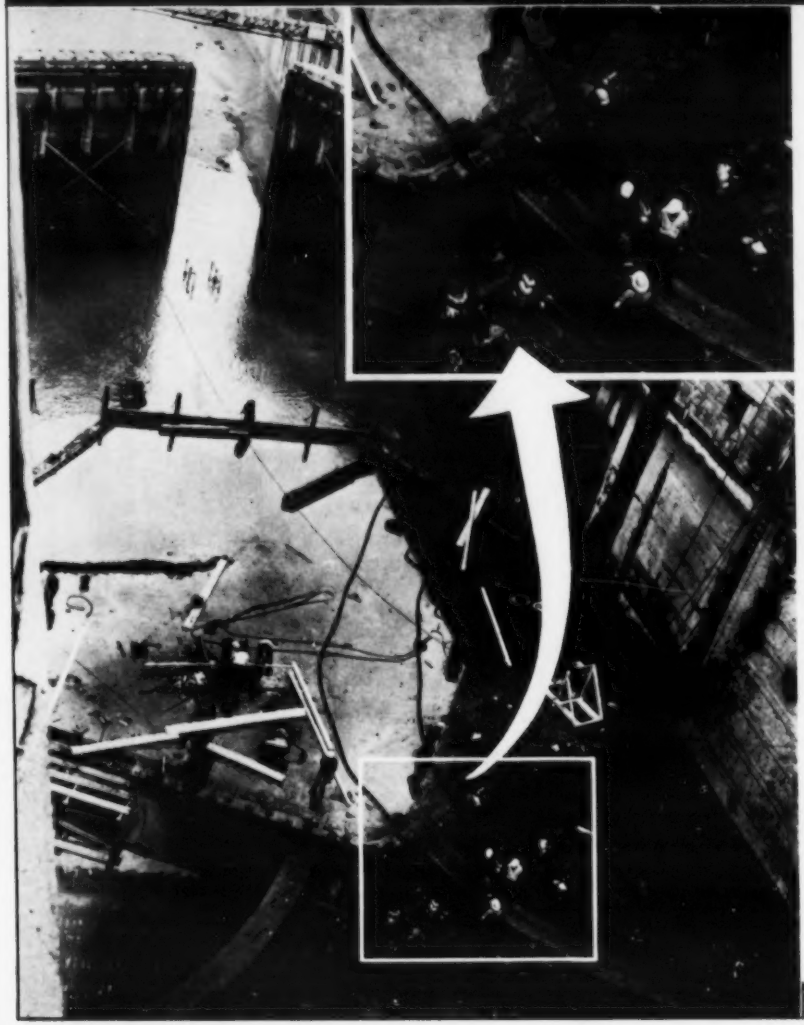

Just five days before President Eisenhower and Queen Elizabeth were due to dedicate the greatest engineering achievement of the decade, a broken timber sill blocked Lock No. 4 in the Welland Canal, vital link in the St. Lawrence Seaway. Sixty-seven vessels were waiting to get through. Lock No. 4 had to be pumped out at once so that repairs could be made. Nine FLYGT pumps were rushed to the site. Only one hour after they were placed in the lock their work was done.

FLYGT pumps require no elaborate installation — they are simply lowered into the water and switched on. These electrically powered, fully submersible pumps can run for weeks without supervision. They will handle a high proportion of solids without clogging, are not damaged by salt water and do not overheat if run dry.

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PUMP BETTER ELECTRICALLY • USE FLYGT!

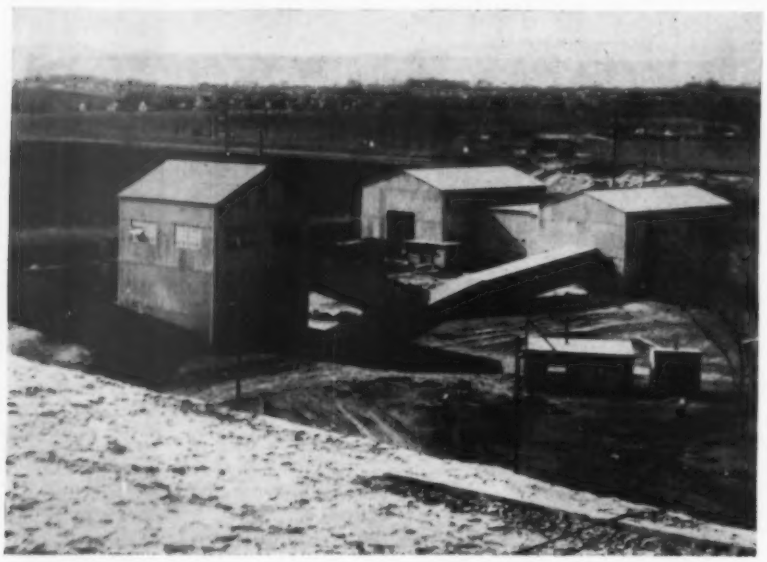
Wet Clay and Rock Crushed Efficiently

at Penn-Dixie's West Des Moines Plant

IN a recently completed program to expand the production of their West Des Moines, Iowa, plant by 70 percent, the Penn-Dixie Cement Corporation erected a new crushing plant and installed hammermills for both primary and secondary crushing. The new equipment replaces the conventional gyratory and hammermill crushers previously used. Penn-Dixie installed a primary hammermill for several reasons, one of them being its ability to handle several different types of material, all of which are often wet and sticky.

Daily production at the new mill averages 3,000 tons of stone, or 375 t.p.h. on a single 8-hour shift. However, in practice the mill's actual operating rate exceeds 450 t.p.h. because of occasional shutdowns during the working shift. Only three men—a crusher foreman, a dump operator, and a clean-up man—are required to operate the virtually automatic mill. A five-day operating week provides a seven-day week's supply of raw material to the cement plant.

The West Des Moines crushing plant employs a closed circuit secondary crushing circuit. Output from the primary unit is fed to a pair of double-deck vibrating screens. Material to size goes directly to stockpile, while oversize material returns to the smaller secondary hammermill and then is fed again to the screens.



The new crushing plant of the Penn-Dixie Cement Corporation at West Des Moines, Iowa. The stone is received by rail from its Winterset quarry 30 miles southwest.

Primary Hammermill The primary crusher at West Des Moines is a Hammermills, Inc., Model HMIR-06-NC. Its 15 impact elements are 440-lb. hammers arranged around the rotor in three rows. Swinging on a 60-in. diameter hammer circle, they are operated at 550 r.p.m. In addition, this crusher is equipped with a moving breaker plate which travels, as do the hammers, in the direction of feed. Thus, in effect, the breaker plate acts as a feeder to keep wet or sticky material moving through the mill, preventing any possibility of plugging the unit.

The mill is direct-driven through a doughnut-type coupling by a 600-hp., 2,300-volt motor which drives not only the hammers but also two 5,000-lb. flywheels. Actual power consumption of the motor averages 575 hp. The breaker plate is driven by a separate 15-hp., 440-volt electric motor.

Secondary Hammermill The secondary crushing unit is a Hammermills, Inc., Model HMI-05-NC, having the same basic design but slightly smaller capacity. It is equipped with 15 290-

lb. hammers, also arranged in three rows, and a single 3,000-lb. flywheel. The main drive is set at 720 r.p.m. by a 300-hp., 2,300-volt motor. In normal operation its actual power consumption averages 250 hp. The mill is also equipped with a moving breaker plate driven by a separate 7½ hp., 440-volt motor. All other equipment is also driven by 440-volt motors.

Quarry The material handled at West Des Moines consists of limestone, shale, and diaspore. The limestone is stratified. A fairly high clay content in the diaspore and a good deal of surface moisture create the major crushing problem —the one which the hammermills are designed to overcome. In rainy weather, the open-hopper railroad cars add to the problem of wet, sticky material.

The quarry supplying Penn-Dixie's suburban Des Moines operation is located 30 miles southwest at Winterset, Iowa. Here a 2½-cu. yd. shovel loads quarry-run stone into open-type, 50-ton capacity rail hopper cars. Operating on a five-day week, the Chicago, Rock Island & Pacific Railroad hauls two strings of 30 loaded cars from the pit to the plant daily. Although the mill rail yards have trackage for handling 75 cars at a time and the daily haul is only 60 cars, train length is limited by the steep grades enroute to 30 loaded cars.

At West Des Moines the loaded train is spotted on the inbound spur by the railroad. A Penn-Dixie diesel switcher works the cars, one at a time, through a rotary dumper. After a complete string has been dumped, the switch engine spots the empties on a parallel siding, where the C.R.I.&P. picks them up for return to the quarry.

The rotary dumper is located on grade in the mill building. Powered by a 40-hp., 440-volt motor, the dumper has a 90-second dump cycle.

Plant The hopper cars are emptied into a funnel-shaped hopper constructed of ¾-in. steel plate and lined with ¾-in. abrasion-resisting wearing plates. At the bottom of the hopper, 30 ft. below grade, a 5- by 65-ft. apron feeder picks up the rock to carry it to the primary crusher. The 12-in. pitch feeder operates at 15 f.p.m. and is equipped with 1-in. lifters of ½-in. steel to carry the stone up the 25-degree grade to the hammermill hopper.

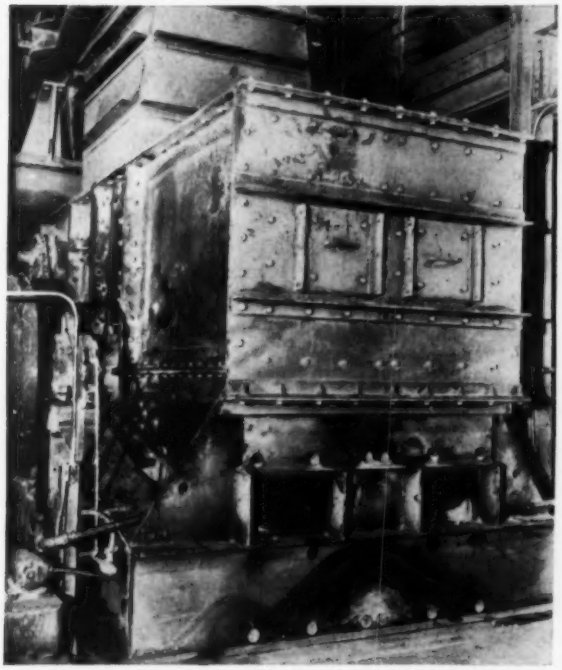
The skirts guarding against spillage from the apron feeder are also made of ¾-in. steel and have ¾-in. wearing plates. To avoid loss of fines at this point a 36-in. clean-up belt runs beneath the apron feeder and parallel to it. Discharge from this belt bypasses the primary hammermill, falling directly to the mill output pan feeder.

This apron feeder, operating at 15 f.p.m., carries shovel-run material from the dump hopper to the primary hammermill.

Rock delivered by the apron feeder may range in size up to 3 by 6 ft. It drops into the 50- by 60-in. hopper of the hammermill; and as it falls from there into the crushing zone, it is met by the swinging hammers and is driven between them and the moving breaker plate. Output from the primary mill is 80 percent minus 3-in. It has never been choked up, either by high moisture content of the feed or by excessively large feed.

From the primary hammermill the broken rock drops onto a 5- by 24-ft. manganese pan feeder which deposits it on stone belt No. 1. This belt is 42 in. wide and about 220 ft. long and carries the primary output to the screen house, where it discharges on a pair of identical inclined, double-deck vibrating screens.

Overflow from either the 1-in. mesh top screen or the ½-in. mesh lower screen falls through a chute to stone belt No. 2. Material passing both screens is fed to stone belt No. 3, which carries it to stockpile. In the storage area the material transfers from stone belt No. 3 to a storage belt which is equipped

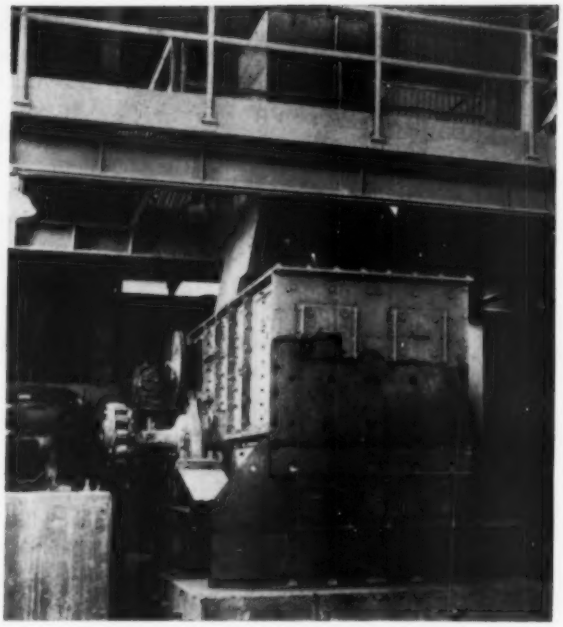


The primary hammermill has a capacity of 450 t.p.h. One of the two 5,000-lb. flywheels is at the left, and the 600-hp. drive motor extends to the right of the mill housing. The sprocket drive for the moving breaker plate shows behind the flywheel.

with trippers for spotting the output in the appropriate storage area. From this point it will be delivered to the preliminary mills in the new raw grinding department.

In conjunction with stone belt No. 1 and the vibrating screens, stone belt No. 2 and the secondary crusher form the continuous loop in the closed-circuit crushing system and insure breakage to specifications. Stone belt No. 2 returns oversize material from the screen house to the secondary crusher. The secondary hammermill crushes the oversize material which is then returned through a chute to stone belt No. 1 for the trip back to the screens.

All the stone-carrying belts are completely enclosed. Since all three tail pulleys are located beneath grade in either the screen house or the mill building, they travel initially through concrete lined tunnels until they break above grade. From that point they are housed in corrugated cement-asbestos enclosures until they enter the second building above grade.



Screen rejects are fed to the secondary hammermill by stone belt No. 2 (not visible) through a chute above the mill hopper. The hammer and breaker plate drives are similar to those on the primary hammermill.

Maintenance Maintenance is considered by some to be a serious drawback in hammermill operation. However, it is no problem at Penn-Dixie. Worn hammer impact surfaces are rebuilt with hardfacing material during the mill's normal Monday shutdown. Hardfacing is done right in the machines without pulling the hammers. In the primary hammermill this is an 8-hour job consuming about 1 lb. of Stoody No. 1027 welding rod per hammer, or a total of 15 lb. per week.

In the secondary machine a total of 7 or 8 lb. of rod is required, and the job takes about 5 hours. Penn-Dixie has one complete set of replacement hammers on hand for each crusher, but none has had to be installed since the plant opened in the autumn of 1957.

Like the dump hopper and the apron feeder skirts, the hammermills are also lined with resistant manganese steel to minimize wear on inner surfaces.

The main bearings of the primary hammermill have not presented a maintenance problem; they are lubricated by a forced circulation system which is interlocked, through a pressure sensitive switch, with the apron feeder and the mill drive circuits. When the oil pressure is low, as at start-up, the switch is open to prevent operation of either the feeder or the mill. The switch closes when oil pressure is sufficient for safe operation, thus allowing the hammermill and the feeder to run.

Other Controls Power circuits for all components of the system except the hammermills themselves are interlocked in the master control room. Failure or shutdown of any single belt, feeder, or screen removes power from the preceding conveyor equipment. This arrangement prevents accidentally overloading or damaging any unit in the system. The hammermills are excluded from this interlocked circuit so that they will not be shut down under load, an occurrence which would probably create a problem in starting up again. If power to other equipment is cut out automatically, the mills are allowed to run until clear, and are then shut down manually.

Mill Building An interesting feature of the installation is the mill building. Its floor is located 46 ft. below grade; and since at times the water table stands at only 8 ft., the building is subject to nearly 40-ft. hydrostatic pressure. In order to prevent bouyancy and water seepage, the concrete walls at the bottom of the building are 2½ ft. thick and the floor is 4 ft. deep.

Alpha Portland Cement Plant Wins Three Safety Awards

Employees at Alpha Portland Cement Company's Jamesville, N.Y., plant received three safety awards at presentation exercises held at the plant on August 12.

Two of the awards, presented by the Portland Cement Association, were the Safety Trophy award for an accident-free year (1958) and the 1,000 Day Club award, presented for a record of more than 1,000 consecutive days with no lost-time injuries.

The third was a Certificate of Commendation from the National Safety Council for operating over 400,000 man-hours without a disabling injury.

Construction is proceeding on schedule at the new Michigan Chemical Corporation sea water magnesia plant at Port St. Joe, Fla. Production of high-purity chemical and refractory grades of magnesium oxide is scheduled to begin this autumn. Output from this plant will augment substantially the company's present capacity at Saint Louis. Mich.

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Enter 138 on card, page 167

Industry Personalities

A. W. Petersen

A. W. PETERSEN has been appointed manager of industrial relations for Penn-Dixie Cement Corporation. He succeeds A. H. BOSTWICK who is retiring. Mr. Petersen, Who will continue to operate from Penn-Dixie's Nazareth, Pa., offices, has served as assistant manager since joining the company in 1958.

REYNOLDS A. SANDBERG has been appointed southwestern traffic manager of United States Gypsum Company, with headquarters in the new traffic office in Dallas, Tex.

HOMER C. BOHN and MILES P. MERWIN have been appointed sales representatives in the Detroit area for the Dundee Cement Company. Mr. Bohn has served as a civil engineer with the Michigan State Highway Department, and was later sales engineer with American Prestressed Concrete Inc. of Centerline, Mich.

Mr. Merwin was associated with Detroit Fuel and Supply and Merwin Building Materials Co. Sales activities for the new $25,000,000 cement producing firm will be directed from the company's offices now nearing completion at Dundee, Mich.

THOMAS E. HOWARD, formerly of the Bureau of Mines' field office, Spokane, Wash., has been named chief of the Bureau's Branch of Ceramic and Fertilizer Materials in Washington, D. C. He succeeds W. F. DIETRICH, who recently became chief, Division of Mineral Resources at the Bureau's San Francisco, Calif., regional office.

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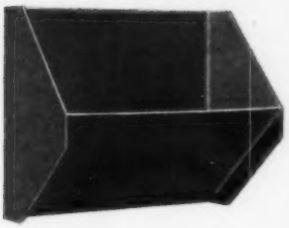

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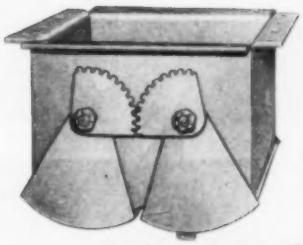

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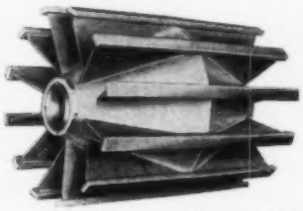

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Subsidiary of Ludlow-Sayler Wire Cloth Company, St. Louis, Mo.

Enter 139-B on card, page 167

How AMSCO helps you MOVE

Read why AMSCO Simplex Teeth and hardfacing are first choice of these users

SIMPLEX TEETH STAY SHARP AFTER 20,000 TONS OF DIGGING

AT VICTORVILLE LIME ROCK CO.

At Victorville Lime Rock Co., Victorville, California, four Amsco Simplex 2-Part Reversible Teeth were installed on a shovel used in a stripping operation. Teeth previously used "lost their points" after digging about 18,000 tons of rock... and had to be replaced or rebuilt. The Simplex Teeth have already dug over 20,000 tons. Paul Keating, Quarry Superintendent, expects to get *at least 25,000 tons* before changing teeth.

Wright Smith, operator of the strip shovel, is equally enthusiastic about Simplex Teeth. He says they can lose more than 2" due to wear, and still hold their points. This means lower cost operation and fewer shutdowns for maintenance. Old-style teeth had to be sent out for welding when worn down a couple of inches.

Victorville Lime Rock Co. produces a pure white lime rock used as an extender or filler in paints, plastics, floor tiles, rubber, ceramics, etc. They operate a 100 ft. deep quarry, and plan to switch to Simplex Teeth on their other production shovels, too, in order to save on maintenance costs.

AMSCO HARDFACING ELECTRODES PROVE BEST FOR BUILD-UP JOBS

AT BAY CONTRACTORS WELDING SERVICE

"Amsco AW-79 wire doesn't twist and gives an excellent, uniform bead" —says Peter Agresta, partner in Bay Contractors Welding Service, El Cerrito, California. He also adds that AW-79 gives service life equal to, or better than, any wire they've ever used.

As a result, Bay Contractors uses Amsco AW-79 (a highly quality-controlled tubular rod) for just about every type of build-up job... except where surfaces require machining.

For example, they use it for build-up of diesel switcher wheels... crawler tractor rollers and idlers... shovel rollers and front take-up rollers... house carrier rollers... sheaves... cutting edges on all alloyed blades.

For further information:

SIMPLEX TEETH—see your power shovel equipment dealer, or write Amsco for technical bulletin.

HARDFACING ALLOYS—see your Amsco welding distributor, or write direct for Condensed Catalog and Price List.

AMSCO

AMERICAN Brake Shoe COMPANY

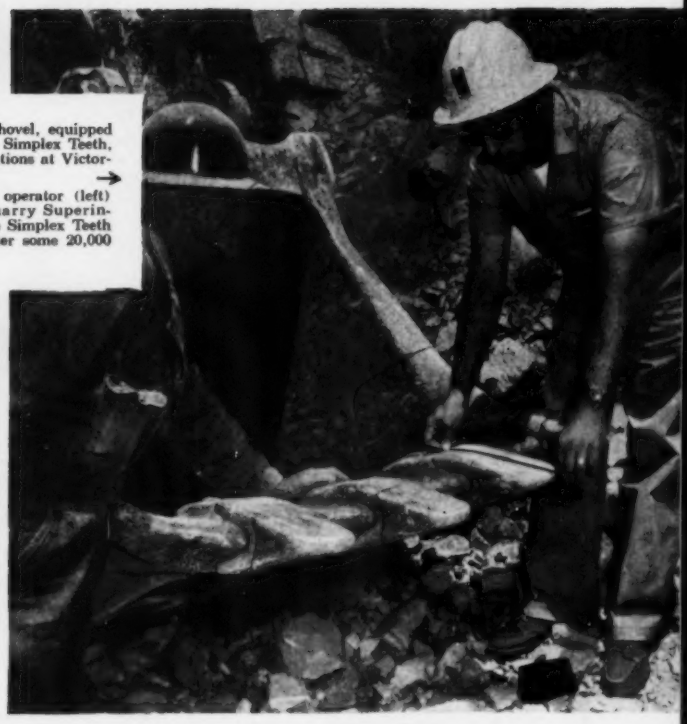
American Manganese Steel Division • Chicago Heights, Ill.

Other plants in: Denver • Los Angeles • New Castle, Dela. • Oakland, California • St. Louis
In Canada: Joliette Steel and Manitoba Steel Foundry Divisions
Welding products distributed by Canadian Liquid Air Co., Ltd.

Enter 140 on card, page 167

MORE TONS PER DOLLAR

←
Northwest Model 6 shovel, equipped with Amsco dipper and Simplex Teeth, used for stripping operations at Victorville Lime Rock.



→
Wright Smith, shovel operator (left) and Paul Keating, Quarry Superintendent (right) examine Simplex Teeth on Amsco dipper . . . after some 20,000 tons of digging.

→
Peter Agresta, of Bay Contractors Welding Service, uses automatic machine of own design to build-up tractor idler.

←
Build-up of crusher jaw plate is demonstrated by a Bay Contractors' welder . . . Manganese rounds are first tack-welded across surface of plate with Amsco Nicro-Mang. Amsco Manganese Rod is used in the Amsco semiautomatic machine to build-up plate to original cross-section. The plate is then straightened by a special process.

The new standard for kiln ring removal

RINGBLASTER®

MARK-1
KILN GUN

and Western®
INDUSTRIAL AMMUNITION

Super-X Shell — For use in kilns over 150' long. Develops 8900 ft. lbs. of muzzle energy — breaks hardest rings quickly and efficiently.

Reduced Velocity Shell — Lower-powered (approximately 7500 ft. lbs. muzzle energy) for ultimate efficiency in shorter kilns . . . minimizes possibility of damage to end plates, feed pipes, etc.

Super-X Zinc Shell — Extra-large zinc slug *penetrates* toughest rings. Use with Super-X lead slugs for maximum penetration and "knock-down" power.

Every day kiln operators are adopting Ringblaster, with custom-powered Western ammunition, for faster, easier ring removal. Regardless of conditions, this hard-hitting team does a better job of smashing the toughest thickest rings systematically and efficiently.

Job-proven and widely accepted by the industry, Ringblaster and Western offer amazing advantages in keeping your kilns running at peak capacity. Put Ringblaster and Western to work for you . . . send for illustrated pamphlet and details today on how this system can save you money!

In addition to Ringblaster®, the versatile Ramset System includes Ramset powder-actuated and Shure-Set® hammer-in tools and fasteners.

KILN *RINGBLASTER* GUN

Ramset® Fastening System

WINCHESTER-WESTERN DIV. • OLIN MATHIESON CHEMICAL CORPORATION
300-K WINCHESTER AVENUE • NEW HAVEN 4, CONNECTICUT

Enter 142 on card, page 167

C. Bruce Flick

E. T. Fitch

C. BRUCE FLICK, secretary-treasurer of Ideal Cement Company, Denver, Colo., has been elected president of the Rocky Mountain Control of the Controllers Institute of America.

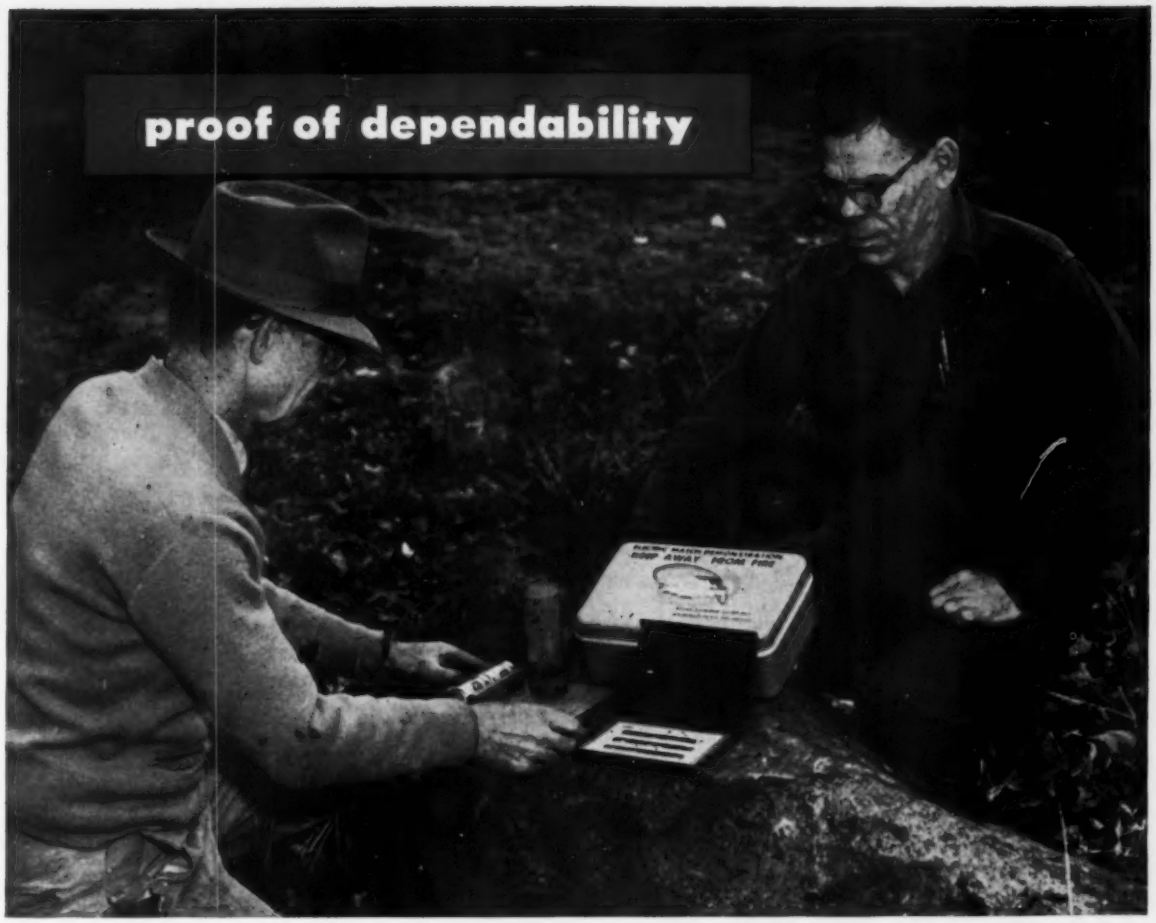
E. T. FITCH, controller at Dravo Corporation, has been elected president of the Pittsburgh Control of C.I.A. At the annual meeting of the Institute's Florida Control, H. Y. KINARD, vice-president and treasurer, Maule Industries, Inc., Miami, Fla., was re-elected first vice-president. In New York City, WALTER C. LAUT, controller and assistant secretary, North American Cement Corp., was renamed secretary of the local controllers' group.

The new secretary of the Dayton Control is DELIBER L. JAMES, assistant treasurer, Price Brothers Company. One of the new directors of the Cleveland Control is ROBERT W. FORT, assistant vice-president, finance, at Medusa Portland Cement Co., Cleveland, Ohio.

DORSEY B. BOBBITT has been named manager of the National Gypsum Company's newly-created western sales division, with headquarters in Kansas City.

ALBERT E. DOWNES has been appointed sales representative in the metropolitan New York area for Alpha Portland Cement Company of Easton, Pa.

JACK B. COLLINS has joined the Oregon Portland Cement Company, Portland, Oreg., as sales representative. Mr. Collins' background centers around the sand, gravel, and ready-mix concrete industries. His experience in heavy construction includes projects at the Bonneville, Boulder, and Grand Coulee dams.



See this Demonstration!

Your Atlas Representative Can Show You Actual Performance of Unique Electric Match Contained Only in Atlas E.B. Caps

All Atlas Electric Blasting Caps are fired with tiny electric matches so dependable that the armed services use thousands of them in missiles and rockets.

You can prove for yourself how sure-fire Atlas caps really are. Your Atlas representative has an interesting test firing kit to show you. Pick a match at random from his stock and fire it yourself . . . see how it can be depended on to fire in your blast hole.

Your Atlas man can show you *why*, too. Every part of every Atlas match is pre-tested, and the match is completed by multiple dips in high quality flash compounds.

Your Atlas representative will be glad to show you this demonstration, and to help you use Rockmaster and regular Atlas E.B. Caps for dependable initiation and timing to get effective, economical blasting.

EXPLOSIVES DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
Offices in principal cities

Write for your copy of the new 60-page Handbook of Electric Blasting by D. M. McFarland and Guy F. Rolland.

WHICH 3 OF THESE USED EQUIPMENT BUYS IS BEST FOR YOU?

Only your Caterpillar Dealer offers you these three protected buys on used equipment. Which is best? That depends on how you want to use a unit and what you want to pay. Whatever you want, you'll find it in his lot.

BONDED BUY

1 **A "BONDED BUY"** on used Cat-built equipment is your safest buy. A bonded guarantee, up to $10,000, of satisfactory performance on *all* parts is given when you purchase a "Bonded Buy" used Cat-built machine.

2 **A "CERTIFIED BUY"** covers units of any make in good condition. This type of protection carries your dealer's written guarantee of satisfactory performance.

3 **A "BUY AND TRY"** deal is just what its name implies. This protects you with your dealer's written money-back agreement.

You *know* what you're buying from your Caterpillar Dealer. You'll find him listed in the Yellow Pages. Visit his Used Equipment headquarters for the best buys in the market!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST BUYS IN NEW AND USED EQUIPMENT

Enter 144 on card, page 167

CHARLES E. SCHEIRER, of the Concreting Materials Section, National Bureau of Standards, has been awarded the U. S. Department of Commerce Silver Medal for Meritorious Service. Mr. Scheirer was cited for "unusually competent performance of official duties for almost 40 years." Mr. Scheirer has been assigned for many years to the Allentown, Pa., laboratory of the Concreting Materials Section. His duties include the testing of portland cement in accordance with federal specifications.

FRANK B. PHILLIPS JR. has been promoted to the post of sales manager of the Houston District for National Gypsum Company. The area covers southeastern Texas. Former head of the NEW ORLEANS district, he will replace DORSEY BOBBITT, new manager of the Western Sales Division. Mr. Phillips joined National Gypsum in 1946 and was named an assistant district manager three years later. He became New Orleans district manager in 1953.

Two former officers of the Mexico Refractories Company, Mexico, Mo., have been elected officers of the Kaiser Aluminum and Chemical Corporation following the recent merger of the two firms. W. BASIL LEACH, formerly president of Mexico Refractories, is now a vice-president of Kaiser Aluminum and Chemical Sales, Inc. CHARLES A. SMITH, who was executive vice-president of Mexico Refractories, has been elected a vice-president of Kaiser Aluminum and Chemical Corporation.

At the same time EUGENE C. TINSLEY has been named as general manager of subsidiaries of the Mexico Refractories Company Division.

JAMES M. MURRAY, director of marketing of Pittsburgh Coke and Chemical Company's Green Bag Cement Division, has retired. He joined the company in 1931 as a salesman and rose through assistant sales and sales manager positions to head the firm's cement market activities.

H. L. Hohl

W. G. Irmscher

B. E. Ramsey

H. L. HOHL, W. G. IRMSCHER, and B. E. RAMSEY, are now district sales managers for Peerless Cement Company, Detroit, Mich., a division of the American Cement Corporation.

Mr. Hohl joined the firm as a sales representative in 1947, and served in that capacity until his recent appointment. Mr. Irmscher began with Peerless in 1946 as sales engineer, and became director of technical service in 1957. Mr. Ramsey joined the company in Saginaw as a sales representative in 1950. He was transferred to the Detroit metropolitan area in 1953.

EDWARD H. KENDALL has been appointed to the newly created post of general sales manager for the Permanente Cement Company of Oakland, Calif. He joined the company in 1944 and has been sales manager of Permanente's Pacific Northwest Division since 1946. This position will now be filled by GORDON K. WILSON, formerly assistant Northwest Division sales manager.

Standard Lime and Cement Company, a subsidiary of American Marietta Company, has opened a district sales office in the First National Bank Building, Baltimore, Md. DONALD MCPHAIL, for the last three years the highway and general contractor representative for the company, was appointed district sales manager.

Enter 145 on card, page 167 →

Cat DW21-PR21 units handle rock "on the double"

Increasing production is one of the soundest ways to cut quarry costs. Caterpillar DW21 Tractors with Athey PR21 Rear Dump Wagons were designed to help quarry operators do just that. Here's why:

They're big, rugged and an easy shovel target. They have a low center of gravity and are maneuverable.

The payoff of these features is in top production. For example, on the job pictured below, there were three Cat DW21-PR21s at work. The units were required to maneuver in limited room on benches and steep haul roads. Material included shot rock and sandstone. On haul lengths averaging 300 yards, the units handled 275 cu. yd. an hour.

New DW21 Series G now 345 HP

Now a new DW21 Series G is matched to the 22.5 cu. yd. PR21 for even faster production on the toughest jobs. Compared with the model it replaced, it has new HP—345 (maximum output) for an increase of 8%. It also has 12% higher rimpull. This increased rimpull provides up to 20% faster travel speeds under similar haul road conditions. Equally important, the horsepower increase was achieved without any sacrifice whatsoever in the excellent torque characteristics of the Cat Super-Turbo Engine.

Get the complete facts on the Cat DW21-PR21 from your Caterpillar Dealer. Ask for a demonstration. Pick a tough job—see for yourself how this giant handles the hard work!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

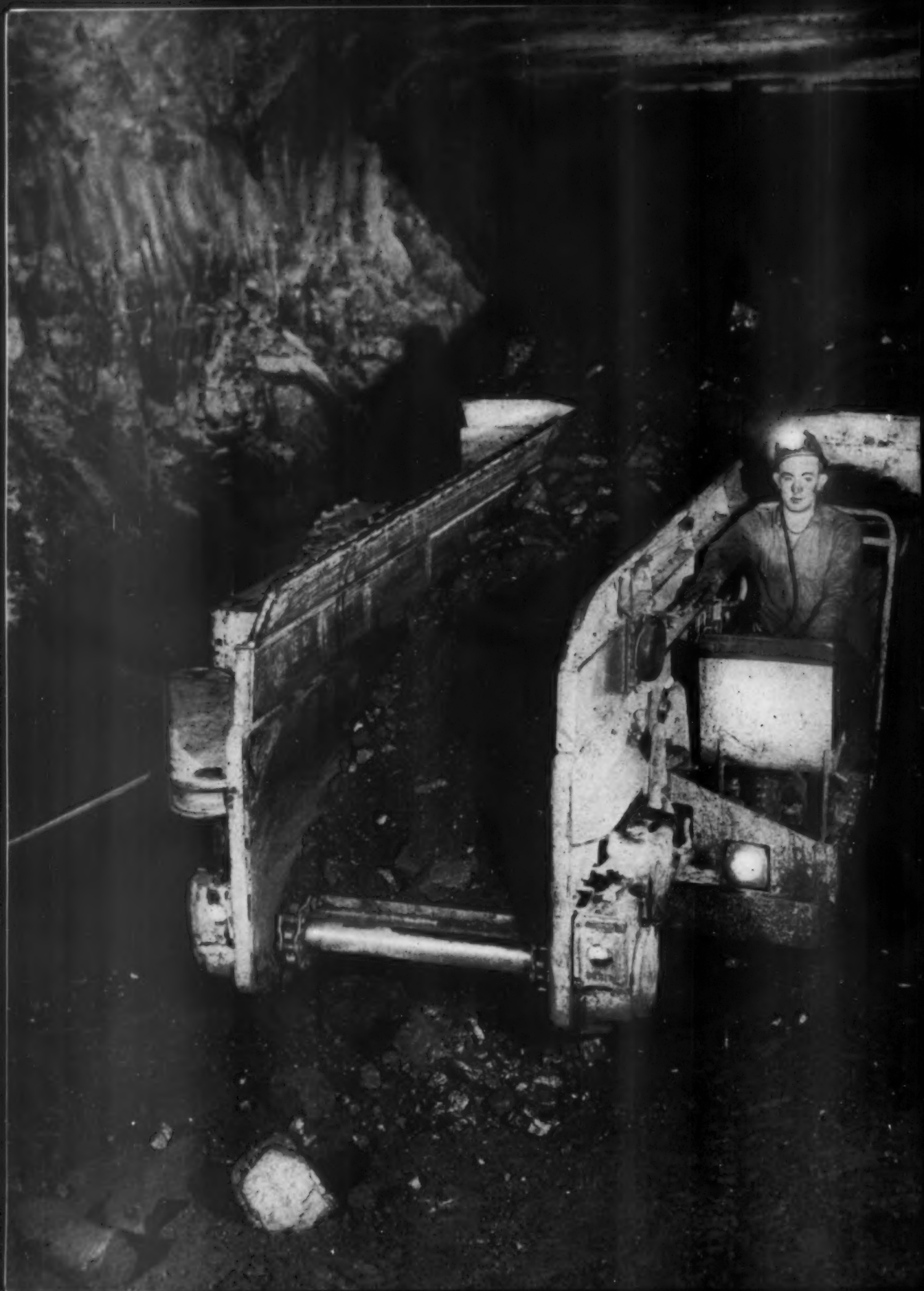
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS

LOAD FAST! PR21 offers a big target. Short non-stop turns of DW21-PR21 unit speed spotting under shovel and work on a narrow bench. PR21's special steel withstands impact, abrasion and corrosion.

ROLL FAST! Two of three DW21-PR21 units on the job. DW21 combines high travel speed with excellent torque characteristics. The PR21 has a 22.5 cu. yd. heaped and 62,000 lb. capacity. All this adds up to fast cycles, top production.

DUMP FAST! PR21 has hydraulic hoists for quick and complete dumping of any material. DW21's hydraulic steering facilitates maneuvering. Wide-section, tubeless tires provide maximum flotation and sure traction.



NEW INDEPENDENT SURVEY SHOWS HOW

ANACONDA MINING MACHINE CABLE CAN SAVE YOU 75% OF THE ORIGINAL CABLE COST!

The factual report of a well-known industrial engineering firm shows that the elimination of even one cable failure per month can result in a savings of 75% of your original cable investment.

Such significant savings emphasize the importance of choosing cable of the highest quality. Don't compromise. The few cents you may seem to save initially can turn into unnecessary high costs later. Be sure—specify time-proven Anaconda Mining Machine Cable.

Copies of the report mentioned above, on a method of determining the dollar cost of cable failure, are available to qualified users on request. For your copy, or for further information on Anaconda Mining Machine Cable, see the Man from Anaconda, or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York. 59214

See the Man from

ANACONDA®

for Mining Machine Cable

Enter 146 on card, page 167

General Electric Announces Newest In The Complete Line Of Adjustable-Speed Drives

PARMATIC SPEED VARIATOR...newest in General Electric's complete line of packaged adjustable-speed drives . . . provides greater machine flexibility, better quality control, higher output and efficiency.

STATIC POWER

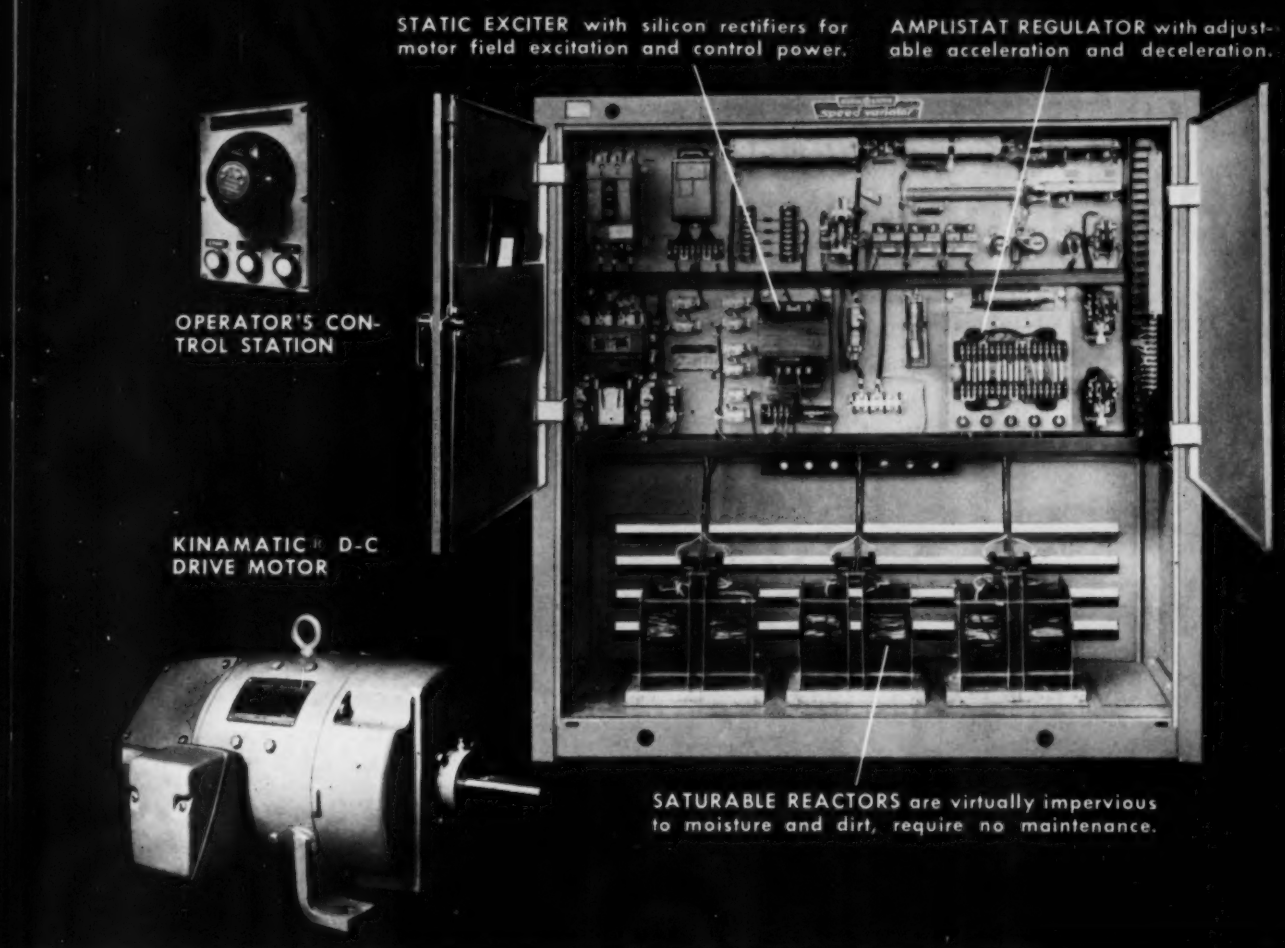
for less maintenance, less downtime, added profit. New excitation and power conversion systems have no rotating parts. Sealed silicon rectifiers and saturable reactors need no warm-up, virtually eliminate power unit maintenance.

25% SMALLER

for easier installation. Reliable, long-life G-E components are factory assembled in compact, space-saving power unit, wired and tested before installation to assure accurate control, reduced installation time and expense.

50% LIGHTER

for lower shipping and handling costs. New Speed Variator meets industry's demand for lighter, more powerful drives—packs more power, weighs 50% less than other drives of comparable rating, 2000 lbs less in 100-hp ratings.


STATIC EXCITER with silicon rectifiers for motor field excitation and control power.
AMPLISTAT REGULATOR with adjustable acceleration and deceleration.
OPERATOR'S CONTROL STATION
KINAMATIC® D-C DRIVE MOTOR
SATURABLE REACTORS are virtually impervious to moisture and dirt, require no maintenance.

FIELD PROVEN

by two years' impressive on-the-job performance in several hundred installations in 15 industries. Experience indicates high operating efficiency, lower cost installation and maintenance for a greater return on your investment.

- **GOOD SPEED REGULATION:** 5% with 100% load variation. Closer regulation available with modification.
- **WIDE SPEED RANGE:** Standard Parmatic Speed Variator provides 8 to 1 range or wider if required.
- **RESISTS CONTAMINATION:** Saturable reactors and hermetically sealed rectifiers resist dirt and moisture.
- **QUIET AND VIBRATIONLESS:** New power unit design eliminates noise and vibration—expands drive versatility.

Limitations: G-E Kinamatic Speed Variator with motor-generator set is recommended for applications requiring power absorption for stopping or overhauling loads. *For more information,* call your General Electric Sales Engineer, or write for GEA-7012, Section 821-1, General Electric Company, Direct Current Motor and Generator Department, 3001 East Lake Road, Erie, Pennsylvania.

GENERAL ELECTRIC

Enter 148 on card, page 167

Bearings...

Oil... and How to Save Money

The longer your engines run before need of overhaul—the less your cost of operation. Sinclair Tenol® Motor Oils have earned the reputation not only for giving long bearing life, but also for resisting the formation of harmful carbon deposits. Tenol Oils slash down-time and maintenance costs. Next time management asks how you've cut costs, tell them you've switched to Sinclair Tenol—and show them the results.

Call your **Sinclair Representative** for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.

Sinclair

Sinclair Tenol® Motor Oils

The idlers on Joy Limberope conveyors are Joy Limberollers, the original, patented wire rope idlers. Two bearings are mounted at the ends of a piece of wire rope, to which are molded neoprene discs. The idler is simple, light and self cleaning . . . it cushions the load, improves belt training and belt life.

THE JOY LIMBEROPE® CONVEYOR

The Joy Limberope Conveyor is a truly flexible belt conveyor which can be set up quickly and stored easily. The belt is supported by idlers which are suspended from two parallel wire ropes. The ropes, in turn, are supported by rugged stands which incorporate the return idlers.

This construction makes it simple to set up the conveyor, or to tear it down and relocate. Additional sections can be added quickly, and there is no engineering involved. Limberope conveyors follow the contours of the land, and bridge gaps readily, making them ideal for cross-country transport of sand, gravel, stone, spoil, concrete and other bulk materials.

Since the conveyor consists only of stands, wire rope, idlers and belt, it can be stored in a very small area when not in use. This simple construction makes it easy and inexpensive to maintain.

For full information on how the Joy Limberope Conveyor can reduce the per-ton cost of transporting bulk materials at job sites, batch plants and quarries, request Joy Bulletin 338-26.

EQUIPMENT FOR CONSTRUCTION . . . FOR ALL INDUSTRY

JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

Enter 151 on card, page 167

5 reasons why Atlas Copco's "TIGER" is best for stoping and all short-hole drilling!

(1) It's fast and easy to handle!
(2) It's easy collaring, with little recoil!
(3) Features a retractable air leg!
(4) Convenient controls, automatic back head!
(5) Operates on single air supply!

Here's the TIGER—a new, fast, compact rock drill with power and stamina to meet toughest drilling requirements! Its high percussion rate not only speeds penetration, but at the same time cuts recoil to a minimum. With controls conveniently located, collaring is unusually easy.

What's more, the automatic back head prevents dry collaring. Flushing water actually flows before drilling starts. And, the Tiger's "constant blowing" provision sends air through the machine the instant pressure is turned on, keeping water and cuttings from the rotation chuck.

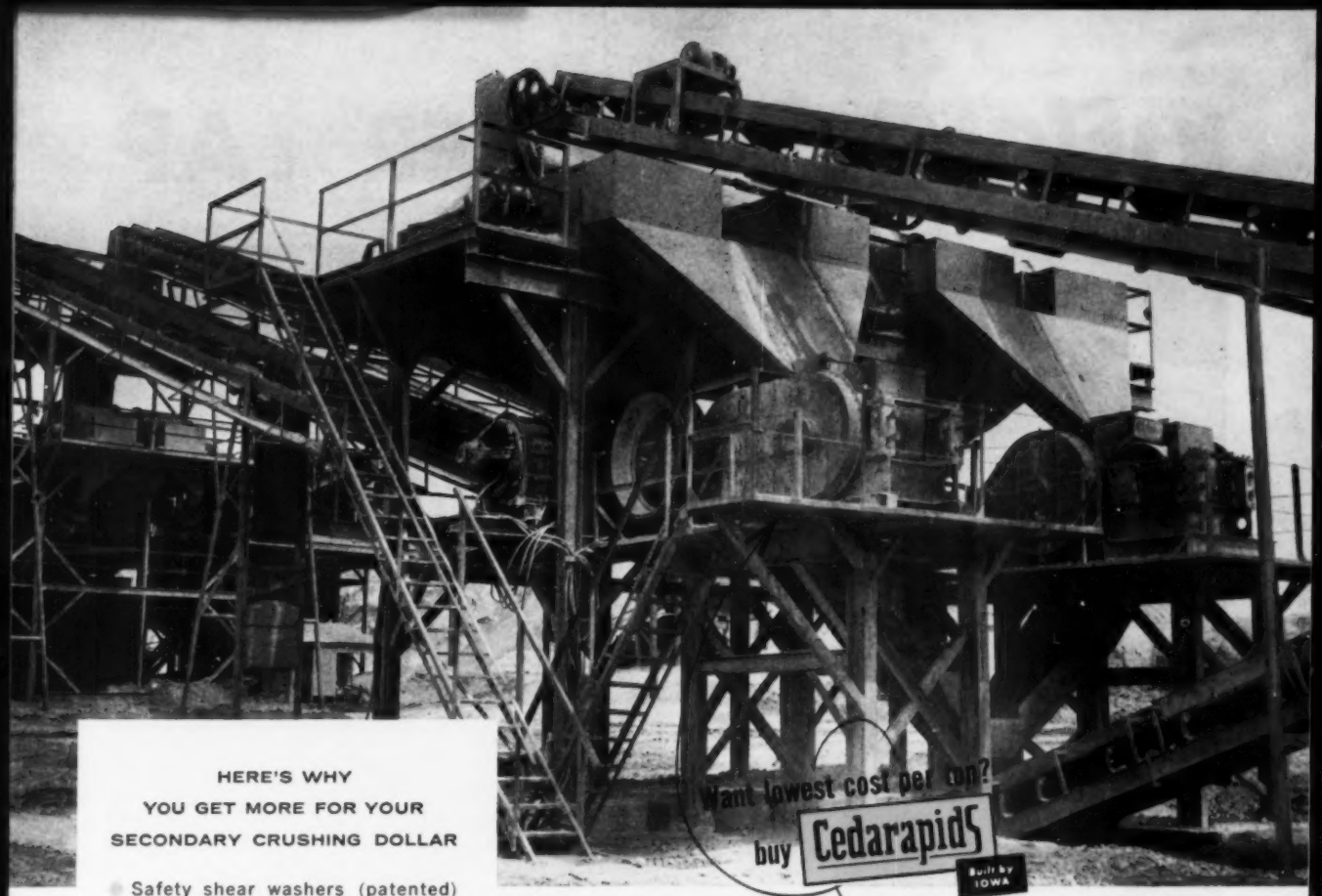
There's still another "plus"—the Tiger's exclusive integral type pusher leg, with retractable piston rod. Operates on a single air supply!

This isn't the whole story by any means. For more facts about the amazing new Tiger rock drill and how it can speed *your* drilling, call your nearest Atlas Copco representative. Or, write to us at Dept. PQ-10.

Atlas Copco

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

930 Brittan Avenue
San Carlos, California
LYtell 1-0375



HERE'S WHY
YOU GET MORE FOR YOUR
SECONDARY CRUSHING DOLLAR

- Safety shear washers (patented) prevent damage from uncrushable material, permit greater tension on springs, thus allowing more material to be finish-crushed to reduce the circulating load.
- More efficient feeding. Material dropped between the rolls penetrates deeper into the crushing area, permits faster feeding. Special feed box with angle divider spreads material across full width of rolls, prevents uneven wear on roll shells.
- Low, rigid, extra-strong frame dampens vibration, reduces headroom requirements.
- Larger-than-average flywheel saves power, maintains high-capacity output even under surge loads.
- Extra-heavy shafts and bearings engineered for long service life.
- Six model sizes to meet volume demands and balance primary production.
- Wide range of roll shell types to handle many crushing conditions.

You can crush more for less with CEDARAPIDS ROLL CRUSHERS

Basically, your profit depends on two things . . . the amount of aggregate you produce, and how much it costs you to produce it. Naturally your secondary crushers won't reduce *all* operating expenses, but if they're Cedarapids, they'll do more than you expect toward assuring greater plant production with lower per-ton costs. The combination of benefit-features in the adjoining panel show you a few of the reasons why you can crush more for less with Cedarapids Roll Crushers. Your Cedarapids Dealer will gladly explain the many other features that make these units your best buy. When you call him, be sure to ask about Cedarapids screens, primary crushers and other components for Cedarapids-engineered stationary plants.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

2559-N

Send for this Bulletin Today

IOWA MANUFACTURING COMPANY, CEDAR RAPIDS, IOWA

Gentlemen: Please send Bulletin RC-1 with complete details about Cedarapids Roll Crushers. I am also interested in your

- ☐ Horizontal Vibrating Screens
- ☐ Primary Crushers
- ☐ Conveyors
- ☐ Washing Equipment
- ☐ Cedarapids Engineering Assistance

Name_____ Title_____

Company_____

Address_____

City_____ State_____

KING-SIZE WATER TAP

It's no problem handling water wherever you need it when you rely on NAYLOR Spiral-weld pipe and Wedgelock couplings.

This NAYLOR combination is designed for easier handling, faster installation and all-around economical performance. Advantages like these stem from the light weight of the NAYLOR spiral-lockseam structure without sacrifice of strength. Speed of installation is added through use of the positive type Wedgelock coupling that requires only a hammer to assemble or knock down.

When you need lines for handling water, tailings or air, it will pay you to check into this practical NAYLOR twosome. Write for Bulletin No. 59.

NAYLOR PIPE *Company*

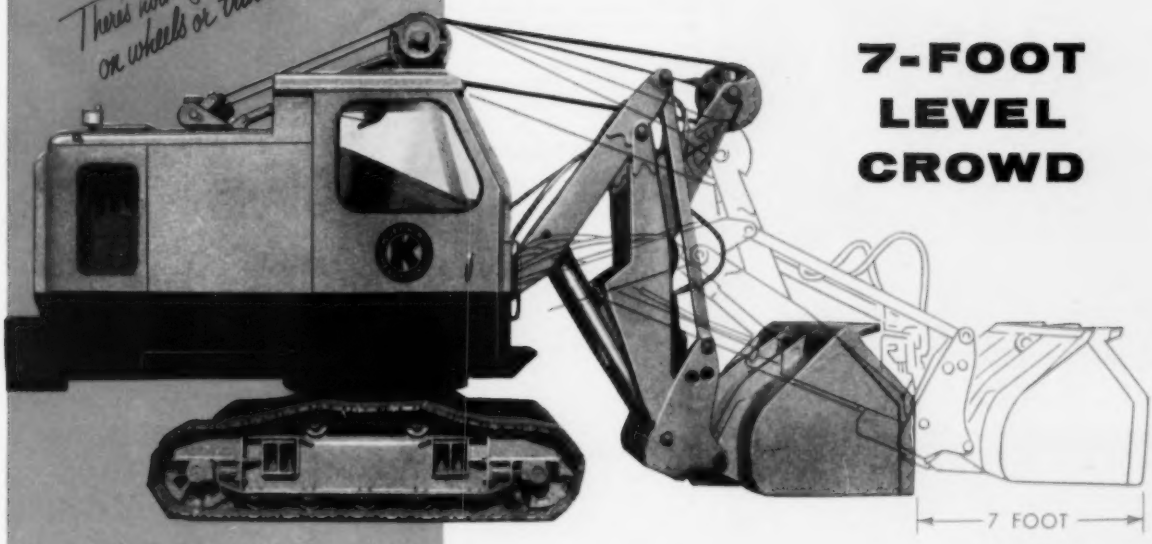
1257 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

KOEHRING®

SKOOPER

There's nothing like it on wheels or tracks!



7-FOOT LEVEL CROWD

from "stand-still" position

Here's a new concept in excavating and material-handling equipment that combines big loader capacity with shovel efficiency — top production *with low maintenance.* Revolutionary new Koehring SKOOPER gives you a *full-revolving* loader for fast "stand-still" digging and loading. Here's the way it works: Powerful action of the twin hydraulic rams crowds the 2-yard bucket along a smooth 7-foot level cleanup without traveling from "stand-still" position — or cuts at any angle of bank slope. SKOOPER then makes a full-revolving swing, dumps load fast and clean from roll-over bucket. Then, it swings back, starts next cycle — *all without traveling.* SKOOPER'S unique "stand-still" cycle not only eliminates the usual drive-in back-out waste motion, but also cuts high maintenance costs of constant skid-turn operation. It works in tight quarters inaccessible to ordinary drive-in back-out-and-turn loaders.

SKOOPER'S wide bucket can cut evenly up a sloping bank as well as on a level grade. Crawlers can be headed into cut or parallel with bank.

Koehring SKOOPER has ample discharge height — easily loads over side or end of truck. 3 types of interchangeable buckets (rock, rehandling, and general-purpose) assure big payloads in all kinds of material . . . on all types of jobs.

See SKOOPER in action — stop-watch its fast cycle time — see for yourself how many tons it moves per hour with only 70 hp. Also check low maintenance costs and unique excavator-crane convertibility. Call Koehring distributor.

Mail to: KOEHRING Division, 3026 W. Concordia, Milwaukee 16, Wisconsin

Send us: ☐ bulletin ☐ specification sheet on revolutionary new SKOOPER

NAME_____ TITLE_____

COMPANY_____ DEPARTMENT_____

STREET_____ CITY, STATE_____

K902 PO

KOEHRING DIVISION OF KOEHRING COMPANY • Milwaukee 16, Wis.

KOEHRING WORK CAPACITY *in action . . .*

A heavy-duty team —
Owner of this limestone quarry has standardized on Koehring® equipment for both excavating *and* hauling. Blasted rock is loaded out by 1-yard 405 shovel —and hauled to crusher in 6-yd. Koehring Dumptors.

Loading RR cars —
stockpiling, lifting 22-ton crusher into place, erecting plant, feeding hoppers in the pit — busy Koehring 805 is a jack-of-all-trades around this gravel plant. Capacities: 2 to 3-yard clamshell or dragline, 52-ton lift crane — converts to 2-yard shovel.

Rock-buster —
Swinging a skull-cracker in stone quarry, a 15-ton 305 crane pulverizes oversize slabs and chunks of blasted rock. A popular size in mines, quarries, the 305 is available on 3 types of mountings: crawlers, truck, self-propelled Cruiser®.

High-lift stripper —
at this coal mine has 1½ yd. dipper on 28-ft. high-lift boom. Work range: 34 ft.-4 in. cutting height and 25-ft.-9 in. dumping height at 45° boom angle. It's a Koehring 605. Also available with 1½-yd. dipper on standard 22-ft. heavy-rock shovel boom.

New tool, new method
speeds digging, loading. Cycle: 7-ft. independent crowd—then swing, dump, and swing back to digging position *with no traveling!* See this 2-yard 205 SKOOPER in action. Check how many tons it moves per hour with only 70 hp!

Unloading machinery
for power plant, one-man-operated 205 Cruiser easily handles heavy loads. Lifts up to 15 tons, has 21.5 mph travel speed — *plus* clamshell - dragline - shovel - hoe convertibility.

Quick facts on KOEHRING WORK CAPACITY:

MODEL	TYPE OF MOUNTING	CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.)	
ON RUBBER			
205	3-axle truck, or 21.5 mph Cruiser	30,000 lbs.	at 12-ft. radius
305	3-axle truck, or 18 mph Cruiser	30,000 lbs.	at 12-ft. radius
330	3-axle truck	60,000 lbs.	at 15-ft. radius
435	4-axle truck	70,000 lbs.	at 15-ft. radius
545	4-axle truck	90,000 lbs.	at 15-ft. radius
ON CRAWLERS	**Size shovel**	**CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.)**	
205	½ Cu. Yd.	20,000 lbs.	at 10-ft. radius
305	¾ Cu. Yd.	30,000 lbs.	at 12-ft. radius
405	1 Cu. Yd.	40,000 lbs.	at 12-ft. radius
545	(Crane only — 85% rating)	90,000 lbs.	at 12-ft. radius
605	1½ Cu. Yds.	72,300 lbs.	at 12-ft. radius
805	2 Cu. Yds.	104,300 lbs.	at 12-ft. radius
1205	3 Cu. Yds.	190,000 lbs.	at 12-ft. radius

Extra lift capacity means . . . **MORE WORK CAPACITY WITH ALL ATTACHMENTS**

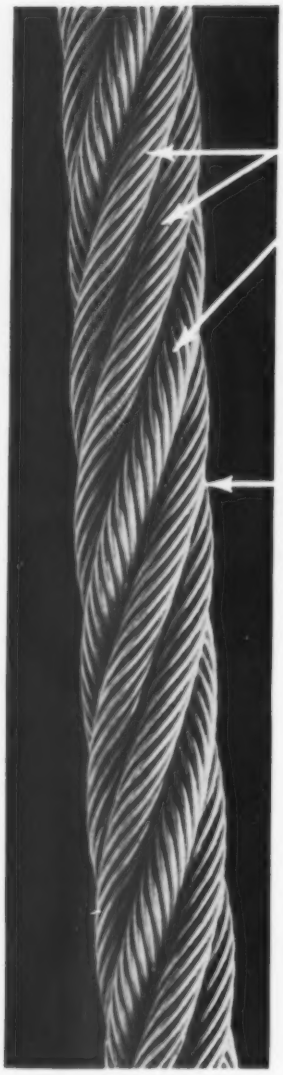
K932

Stripping 30 feet of overburden from coal deposits, Koehring 1205 dragline swings big bucket over a wide work radius. Bucket sizes on the big 1205 range from 3 to 4 yards — and boom lengths from 60 to 170 feet, depending on weight of materials. Yet, operator handles it with light lever-pull (90% power-assist on main drum clutches). Retains sensitive "feel" of load. 360° full-revolving fairlead maintains true cable lead at any pull angle on bucket. 1205 converts to clamshell, 95-ton crane, 3-yard shovel (standard or high-lift). Call your Koehring distributor for complete details on this, and all other sizes.

KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

Koehring excavators, cranes also manufactured in:
ENGLAND • SPAIN • JAPAN

In Canada:
KOEHRING-WATEROUS LTD.
Brantford, Ontario



Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristics.

Heavier outside wires in each strand have greater resistance to abrasion.

"Herringbone* saves our equipment"

AMICO SAND AND GRAVEL COMPANY

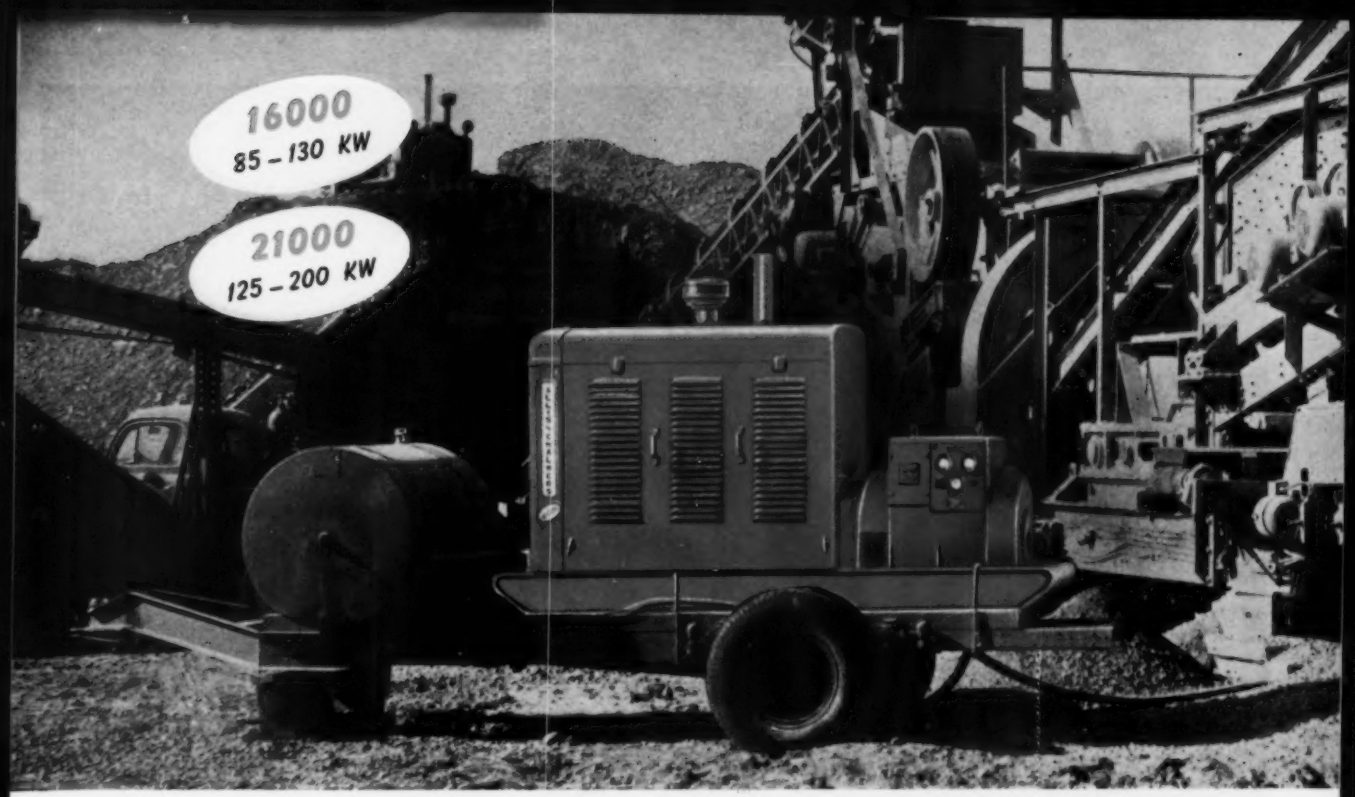
Read this about the most exciting wire rope development in years . . . "Turning a profit on any product often boils down to something that will do a specific job better than anything else. Our equipment operators prefer Roebling Herringbone to any other for heavy lifts, clam shell, drag, pan work or dozers. The savings on sheaves, because of Herringbone's perfect tracking, are a big item as far as we are concerned."

Amico Sand and Gravel Company, Morrisville, Pennsylvania, and Riverside, New Jersey, has told you what this combined regular lay and Lang lay rope—two-ropes-in-one—is doing for them. Roebling is in a position to *show* you how the new Herringbone can, again, in the words of Amico ". . . give you a chance to turn more profit on production equipment." Write to Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for the full and fabulous facts.

*Reg. App. For

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation



This Allis-Chalmers 16000 diesel generating set provides electric power for motors on a crusher operating near Great Falls, Mont. Primary power source for the crusher is an Allis-Chalmers 21000 turbocharged diesel power unit, companion to the 16000.

NEW A-C DIESEL GENERATING SETS WITH BRUSHLESS GENERATORS

. . . offer 5 big advantages

1. Single manufacturer responsibility

Allis-Chaimers manufactures and stands behind all four major components that comprise these *complete* units — the modern diesels, the proved brushless generators, the rapid-response regulators and the switchgear. This means coordinated engineering, matched performance, undivided responsibility — an Allis-Chalmers exclusive.

2. Fast starts — Fuel savings

The modern diesels, with their unique, controlled combustion, start and pick up loads in 4 to 10 seconds. They save fuel, too. The 21000, for instance, saves 8½ to 27% in fuel over other diesels in its class. That's 1 to 2½ gal. of fuel in every 10!

3. Precisely regulated power

The new Allis-Chalmers magnetic amplifier type static voltage regulator has no moving parts or contacts. No parts to burn or wear. It has unequaled fast response to sudden changes in load. Precise power regulation protects sensitive apparatus, easily picks up heavy motor starting loads.

4. Brushless generator has new simplicity

There are no slip rings, no brushes, no commutators to wear or to spark. Newly developed, non-aging silicon rectifiers rotate with the armature and replace the slip rings, brushes and commutator. Brushless generators are ideal for operation in dusty areas or in corrosive or explosive atmosphere — provide unequaled electrical reliability.

5. Fast, easy unit installation

These sets are simple, unit-type, self-contained. They are mounted on husky skids — no special foundation is required, no danger of misalignment. Electrical connections are simplified, to speed installation and reduce related costs.

Your Allis-Chalmers dealer can give you complete specs, and assist in determining your needs. Call him or write Allis-Chalmers, Milwaukee 1, Wisconsin.

BG-36

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**

WONDERWALL, West Virginia's new multiwall bag made with Kraftsman Clupak paper, is inspected by industry leader Robert S. Gerstell, President, Alpha Portland Cement Company, Easton, Pa. "This isn't the first time we've introduced revolutionary advances for the sake of better operations in our plants . . . and for our ultimate customers," Mr. Gerstell states.

....ALPHA CEMENT changed to multiwalls of West Virginia's Clupak* Paper

When the new tougher Kraftsman Clupak paper was being introduced by West Virginia Pulp and Paper Co., the Alpha Portland Cement Co., Easton, Pa., major producer of Portland and mortar cements, did its own testing.

This was only natural for a leading company in the industry—with eight plants in the East, Midwest and South. Alpha's president, Robert S. Gerstell, foresaw the tremendous possibilities of Kraftsman Clupak paper, especially in terms of customer satisfaction and operating economy. With his guidance, Alpha was the first major cement company fully to realize the potentials of this new West Virginia paper!

Alpha's purchasing agent, James I. Maguire, directed the test program which compared Alpha's then current, natural kraft multiwalls with bags made of the new Kraftsman Clupak, the paper with built-in stretch.

Filling, handling and shipping were all examined. On every count, the new Kraftsman Clupak paper bag proved its superior toughness!

Construction of the natural kraft bags, to carry 94# of Portland cement, was 2/40, 2/50 totalling 180# paper basis weight. The new Kraftsman Clupak bags were 1/50, 1/50, 1/50 totalling 150# paper basis weight. Savings on the paper basis weight reduction of 30# amounted to $2.75 per M bags.

But more important—bag breakage in shipments of both Portland and mortar cement has become negligible! And complaints from supply dealers have been reduced to a minimum.

Today, virtually all multiwalls used by Alpha, from whatever supplier, are made of Kraftsman Clupak paper. And naturally, Alpha is using West Virginia's own bag, called WONDERWALL.

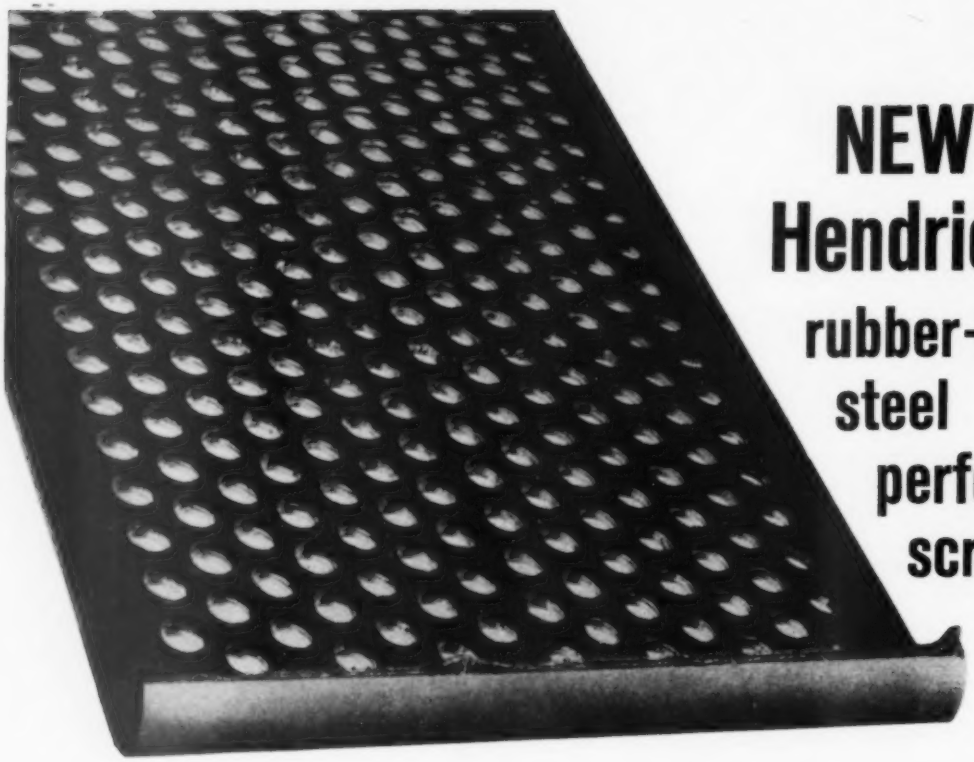
If you pack fertilizer, feed, cement, flour, chemicals or like products, see how you can *cut costs* and satisfy customers *better* with WONDERWALL. Write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N. Y.

West Virginia Pulp and Paper

**Clupak, Inc.'s trademark for extensible paper manufactured under its authority.*

TEST MASTER. James I. Maguire, purchasing agent of Alpha Portland Cement Company, says: "The success of bags made from Kraftsman Clupak paper, due to sheer toughness, was extraordinary from the start. They are not only tougher . . . they make possible realistic savings in bag costs."

WONDERWALL PROVING GROUND #1. Actual handling of WONDERWALLS and other bags made with Kraftsman Clupak paper—in comparison with the old, natural kraft multiwalls—proves the superiority of Kraftsman Clupak paper. No problems with filling, opening, stacking or shipping.



NEW Hendrick rubber-clad steel perforated screen . . .

. . . the best way to beat abrasion!

this picture shows you why

The top layer of the Hendrick screen is made from the same kind of long-wearing rubber that is used in auto tire treads. This rubber blanket takes the brunt of the wear—outlasts conventional screening materials in the toughest service.

Between the two layers is a special adhesive that keeps them sealed tightly together for the life of the screen. The lower section is durable Hendrick Perforated Steel Plate bonded to the rubber by hydraulic pressure to assure a complete, lasting, lamination.

The joined sheet is steam-cured. Result? Extra durability, even in applications where extreme abrasive conditions usually cause screen wear.

Hendrick rubber-clad steel perforated plate is available in a wide range of thicknesses, so you can easily choose one to satisfy your individual screening application. Write today for complete information and sizes.

Rubber-Clad Steel Screens are Patented #2,861,326.

Hendrick

MANUFACTURING COMPANY

39 Dundaff Street, Carbondale, Pa.

Perforated Metal Screens • Wedge Wire Screens • Cascade Wedge Wire Screens • Wedge Slot Screens • Rubber Clad Perforated Screens
Flanged Lip Screens • Flights • Shaker and Conveyor Troughs

SYMONS® CONE CRUSHER AIDS WATER DIVERSION PROJECT

. . . produces over 100,000 tons of granite gravel with original crushing members

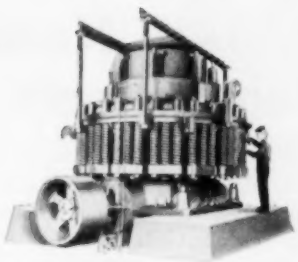
Shown "on location" in scenic Colorado, this 3-ft. Symons Standard Cone Crusher is doing an outstanding job of producing aggregate for a 23-mile long tunnel to divert some 500 million gpd of western slope water out of the Blue River to the eastern slope of the Continental Divide.

Operated by Blue River Constructors, in a crushing plant designed by Brown and Root, Inc. of Houston, this sturdy crusher has produced more than 100,000 tons of tough granite gravel, with the original crushing members.

This is another good example of the dependable performance that contractors and producers have learned to expect from Symons Cone Crushers, in both stationary and portable service.

Write for literature.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin



SYMONS® CONE CRUSHERS
. . . The machines that revolutionized crushing practice . . . **are built in a wide range of sizes, for capacities to over 900 tons per hour. Write for descriptive literature.**

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NORDBERG

SYMONS . . . a registered Nordberg trademark known throughout the world

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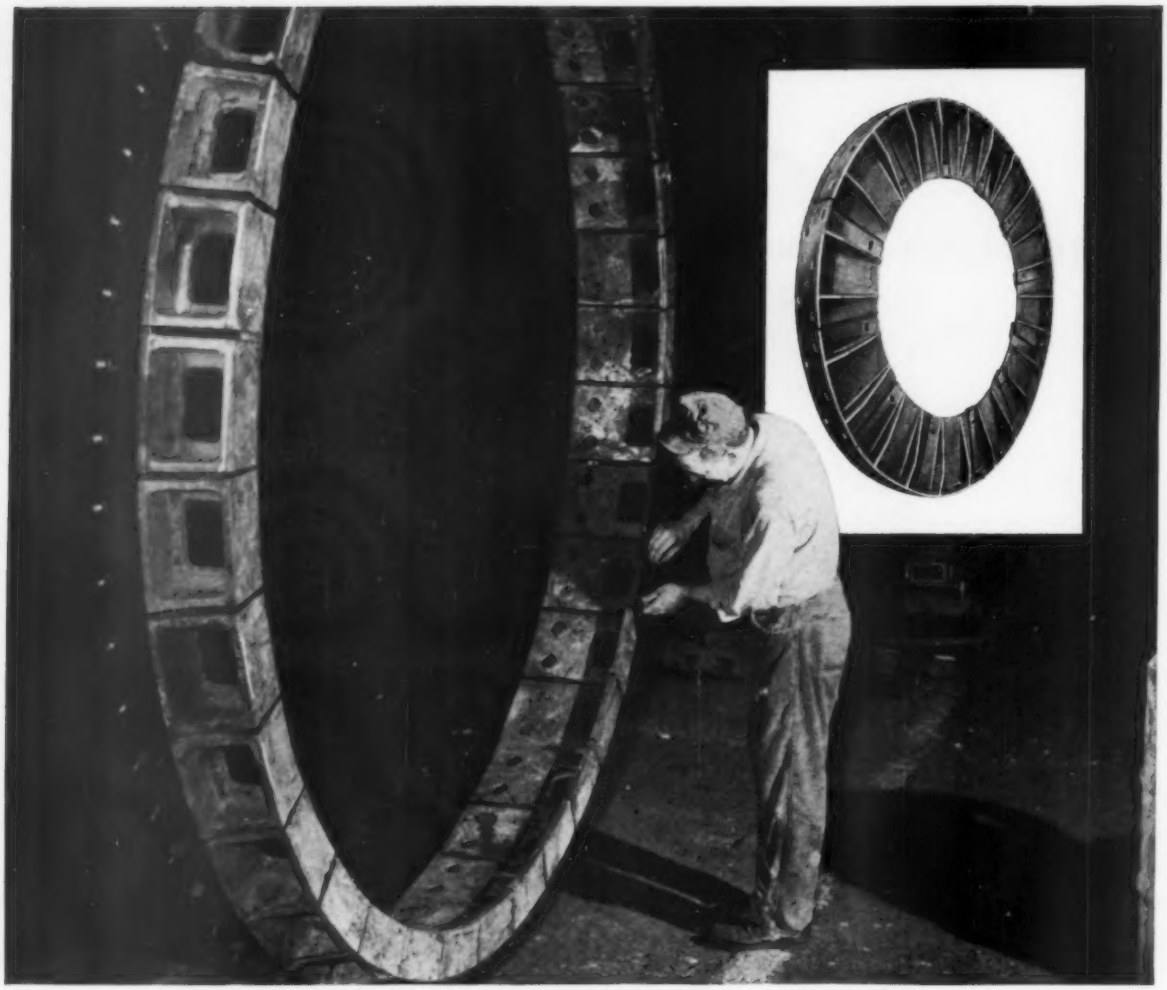
SAN FRANCISCO • TAMPA • WASHINGTON • TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D. F.



IN CEMENT, LIME, AND DOLOMITE PLANTS...

B&W Nose and Tail-Ring Castings Demonstrate Longer Continuous Service

Longer brick life and longer continuous service are being attained by 275 kilns in 54 plants using B&W Nose and Tail-Ring Castings. In many cases, the life of these castings has exceeded 9 years.

Light and strong B&W Alloy Castings have improved kiln performance in most installations. Made of heat-resisting Grade HH alloy, nose ring castings eliminate belling out of the kiln shell, assuring longer brick life and longer continuous operation of the kiln. By protecting the end of the kiln shell from direct flame, the nose ring castings prevent "feathering-down" of the shell because of oxidation. Their design eliminates cracking and warping, experienced with large size castings.

Small size and light weight make B&W Castings easy and inexpensive to install. The protecting flange on the nose ring castings permits the use of low-alloy steel bolts for fastening.

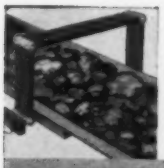
Spare part inventory may be kept low because the same nose ring castings may be used on kilns varying up to 4 feet in diameter, depending upon size. Write for Bulletin S-17. The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

B&W

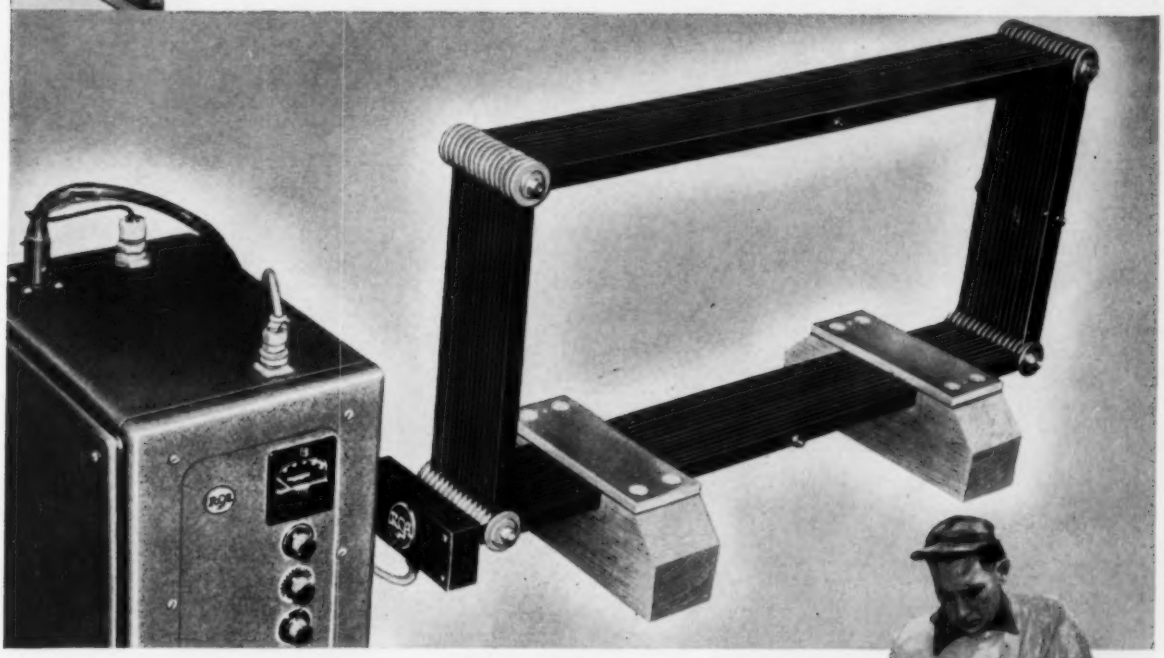
THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

S-467



...GATEWAY TO SAFETY FROM TRAMP METAL



New RCA Electronic Metal Detector Specially Designed for Quarries!

The new RCA Metal Detector aperture has been designed for heavy duty service and to withstand the rigors of humidity and moisture encountered in the quarry industry. Rugged components and built-in voltage regulation in the Control Unit provide efficient, trouble-free operation with a minimum of maintenance.

The basic system is made up of an inspection aperture of copper buss bar construction, and control unit. The aperture is available in a wide range of sizes to meet the requirements of various types of installations. Installation is made very simply around the conveyor belt, without need to dismantle the conveyor.

As the material passes through the aperture, the presence of tramp metal causes a signal to be amplified in the Control Unit. This signal is sent to a relay device which controls the motors of the conveyor, warning alarms or other types of rejection mechanisms. The simplified control system can be easily operated by your plant personnel. The RCA Service Company is available to provide supervision of the installation and offers a service contract.

"Detects the trouble that cripples crushers."

Locates tramp metal and sounds alarm. Protects valuable machinery against any metal object.

FREE *literature on the RCA Electronic Metal Detector for quarrying, mining, lumbering operations, will be sent to you without obligation. Write to RCA, Dept. R-236, Building 15-1, Camden, N. J.*

Tmk(s) ®

RADIO CORPORATION of AMERICA

CAMDEN, N. J.

In Canada: RCA VICTOR Company Limited, Montreal

Radio Corporation of America
Dept. A-236, Building 15-1, Camden, N. J.

☐ Rush details on the new RCA Universal Metal Detector.

☐ Have a representative call to survey plant.

NAME_____ TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Quaker Thermoid THUNDERBIRD...

the toughest (yet most flexible) air hose you've ever used

Give Thermoid-Quaker THUNDERBIRD Wire-Braid Hose the works . . . the roughest kind of impact, twisting, crushing, inside pressures. It'll take everything you can deal out, and then some.

THUNDERBIRD takes this punishment while remaining the most flexible, non-kinking air hose you've set eyes upon. Accurately-controlled angle of wire braid assures this extreme flexibility. Tough neoprene tube resists hot or cold oil. Yellow neoprene cover provides maximum abrasion-resistance and high visibility even in the dark.

Sizes from ⅜" to 4" I.D. Working pressures to 400 psi air or 2,000 psi water. Lengths to 50 feet. Ask your Thermoid distributor about THUNDERBIRD, or write *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Phila. 24, Pa.*

THERMOID DIVISION PORTER **H. K. PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Specialty Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY de MEXICO, S. A.; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD

more information, please

Use postcard to receive literature or details on new equipment and products reported in this issue.

SHOVEL REPLACEMENT PARTS available from *Kensington Steel, Division of Poor & Company,* are featured in Bulletin No. 1060. This new brochure contains illustrations showing the versatility and rugged construction of the complete line of tough, wear-resistant replacement parts for all makes and models of crawlers, shovels, cranes, and draglines. **(301)**

ROLL CRUSHERS manufactured by the *Gruendler Crusher & Pulverizer Company* are covered in Catalog No. 702, which describes construction features and presents charts to aid in the proper selection of crusher, plus charts of capacities, and specifications. **(302)**

A SKOOPER BULLETIN offered by the *Koehring Division* describes the features of the Model 205 Skooper, a full-revolving, crawler-mounted, front-end loader which can load up to 400 t.p.h. Illustrations and captions describe mechanical features. On-the-job photos show the machine at work in mining, excavating, and stockpiling operations. **(303)**

"10 MOBILE FIELD SERVICE ENGINEERS" is the title of a service booklet recently issued by *FWD Corporation.* Prepared for fleet operators and maintenance supervisors, the booklet tells how heavy-duty truck users can get instant help to eliminate down-time of equipment and crews. A listing of FWD's 150 U. S. parts and service headquarters is included. **(304)**

A PORTABLE SCREENING PLANT, known as the EESCO Porto-Screen, is the topic of Bulletin E-76, issued by *Eastern Engineering Sales Company.* The Porto-Screen consists of a hopper feeder, screen discharge conveyor, engine, and fuel tank, with all drives and clutches mounted on a pneumatic-tired chassis. Two models are available with capacities of 30 to 50 t.p.h. and 65 to 85 t.p.h. **(305)**

AMETRON ELECTRONIC SCALE INSTRUMENTATION is discussed in a bulletin from *Streeter-Amet Company.* Explained is the use of components in various combinations to detect, record, and indicate direct physical quantities, as well as perform automatic control functions and transmit the information along distances. Also contained is information on basic instrumentation and accessories available. **(306)**

RELIANCE EQUIPMENT FOR SAND AND GRAVEL PLANTS, including washers, scrubbers, rock crushers, classifiers, belt conveyors, bucket elevators, feeders, and bins, are covered in a bulletin from *Universal Road Machinery Company.* Illustrations, specifications, and construction data are given for each type of equipment. **(307)**

A GUIDE TO THE PROPER SELECTION OF PORTABLE CRUSHING PLANTS is offered by *Eagle Crusher Company, Inc.* The booklet illustrates the company's line of portable crushing plants, giving capacities and features. Emphasized are the model 5500 single pass plant, available in 18x36 and 10x36 sizes; and the Series 6600 portable, a low-hopper feeder plant, available in 10x16, 10x20, 10x24, and 10x36 sizes. **(308)**

SEPARATING DRY COMMODITIES BY SPECIFIC GRAVITY is the topic of a booklet issued by *Sutton, Steele & Steele, Inc.,* describing the Air-Float separator for the dry concentration of ores, minerals, and other industrial materials. Principle of operation, mechanical details, and a partial list of materials treated are given. **(309)**

HEAVY-DUTY SAND AND GRAVEL JIG is described by *The Jeffrey Manufacturing Company* in Bulletin 892. Employing the principle of cleaning with pulsating water, the jig removes foreign material from sand and gravel at capacities up to 75 t.p.h. Dimensions and specifications are included. **(310)**

RAY-MAN CONVEYOR BELT WITH 45-DEG. IDLERS is detailed in a brochure published by *Raybestos-Manhattan, Inc.* The literature tells how the flexible con-

NOVEMBER **PIT AND QUARRY** **1959**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

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struction and built-in stress compensation of Ray-Man conveyor belt takes the sharp angle of 45 deg. idlers without ply or cover separation at the hinge line, permitting larger loads and narrower conveyors. **(311)**

TRAILEVATOR, a self-lowering, self-elevating hydraulic trailer designed for fast utility pick-up and heavy-duty over-the-road cargo hauling is described in literature from *Magline, Inc.* Two models, ½ ton and 1 ton, with rated load capacities of 1,000 and 2,000 lb. are available **(312)**

THE OMEGA HI-WEIGH BELT GRAVIMETRIC FEEDER for the continuous weighing and feeding of dry materials is the subject of a new bulletin released by *B-I-F Industries, Inc.* Included are installation photographs, dimensional drawings, a list of accessories, and a description of the operation of the feeder **(313)**

12 ANNUNCIATOR SYSTEMS available from the *Panalarm Division, Panellit, Inc.*, are covered in Catalog 100C, which contains 52 pages illustrated with equipment photographs, charts and diagrams. Information on the function of annunciators and their applications is provided. Descriptions and engineering data on components and related equipment are also provided. **(314)**

AN OXYGEN ANALYZING SYSTEM from *Leeds & Northrup Company* is described in Product Data Sheet 463. New features for obtaining and analyzing cleaner oxygen samples after combustion has occurred are described. Operating on the paramagnetic principle, the analyzer provides continuous O_2 measurements. **(315)**

POWER-SET OUTRIGGERS available on Lorain Moto-Cranes are described in a bulletin from *The Thew Shovel Company.* These power-operated outriggers use curved beams with attached floats that move out and down simultaneously to adjust automatically to ground level. Also covered are adjustments for crowded quarters or uneven ground, and individual controls for each outrigger beam. **(316)**

SINGLE STAGE CENTRIFUGAL COMPRESSORS are featured in new literature from *Allis-Chalmers Manufacturing Company.* Covered are the B style close coupled; the C style pedestal-mounted, ball bearing; and the D style bracket-stage centrifugal compressors. Included are descriptions of the bearing and shaft seal arrangements for the three styles, and impeller chart, and performance data. **(317)**

A CRAWLER PARTS BROCHURE prepared by *Taylor-Wharton Company* illustrates the Tisco line of bulldozer sprocket rims, tractor pads, end bits, and blades. Operating advantages of these work-hardening manganese steel parts are outlined, and stock part specifications for all first-line crawlers are tabulated. Procedures for rapid installation of Tisco sprockets rims are also described. **(318)**

ULTRASCOPIC SAFETY GLASSES manufactured by *American Optical Company* are covered in a new catalog, containing all data on the Safemaster, mahogany, pink crystal and metal frames. **(319)**

AUTOMATIC MEASUREMENT AND CONTROL OF BULK MATERIALS through unitized weighing systems of pre-engineered components is the subject of a bulletin issued by *Weighing & Control Components, Inc.* The bulletin explains the applications of the company's standardized system of instrumentation to batch and continuous weighing methods. **(320)**

KREEN, a penetrating solvent oil compound for use in automotive engines, is among the several products described in a Product Review issued by *Kano Laboratories.* Other products described include Prox, a rustproof coating; Ex-Rust, a concentrated chemical rust remover; and Kroil, for dissolving rust and loosening frozen parts. **(321)**

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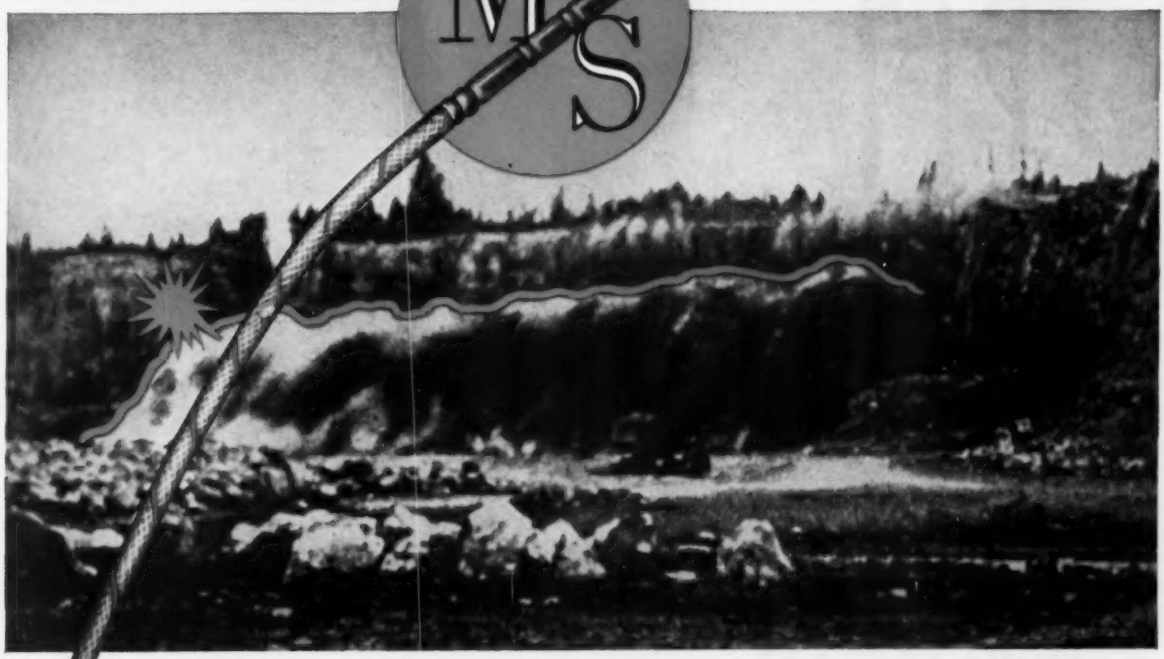
Pan American countries, $10 a year; elsewhere, $15 a year.

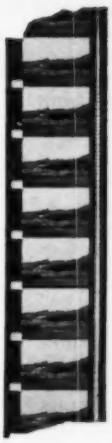
For Millisecond Delay Blasting

PRIMACORD® MS CONNECTORS*



are now available in three periods: 5, 9 and 17 MS

A Primacord MS Connector consists of a metal tube 2¾ inches long, containing an element that produces a delay measured in 5, 9 or 17 MS. A foot of Primacord is crimped in each end of the tube. The Primacord trunk line is cut between holes and the MS Connector joined to each of the two ends with a tight square knot, or lapped with pressure-sensitive tape. Packed 50 to a cardboard tube, 500 to a case.



16 mm movie film from which this enlargement was made.

This unretouched photograph was enlarged from a 16 mm frame. It shows a multiple hole blast detonated with Primacord, and hooked up with Primacord MS Connectors in the trunk line. Note the steady progress of this blast from the point of initiation at the left, as indicated by the red line.

Millisecond detonation of Primacord down lines in medium size holes offers many advantages in multiple hole blasting. Millisecond delay relieves burden, results in improved fragmentation. Less explosive may be required than for comparable instantaneous blasting. Decreased vibration and concussion, controlled throw and reduction of bootlegs are other advantages.

Under certain conditions the danger of cut-off holes can be minimized when Primacord MS Connectors are used on the order of 5, 9 or 17 milliseconds. In any event, the presence of unexploded powder in the muck is less hazardous when Primacord is the detonating agent. It cannot be set off by stray electrical currents, sparks, or ordinary shock, but must be detonated with fuse and cap or electric blasting cap.

For more information see your explosives supplier or write to

*Manufactured by E. I. duPont de Nemours & Company. Available through explosives suppliers

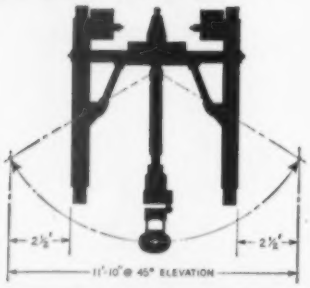
MS-1

THE ENSIGN-BICKFORD COMPANY

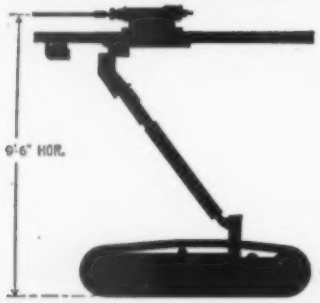
Simsbury, Connecticut • Since 1836

Safety Fuse, Primacord® and Detacord® Detonating Fuse, Ignitacord®, Quarrycord®, Pyrotechnical Devices and Blasting Accessories

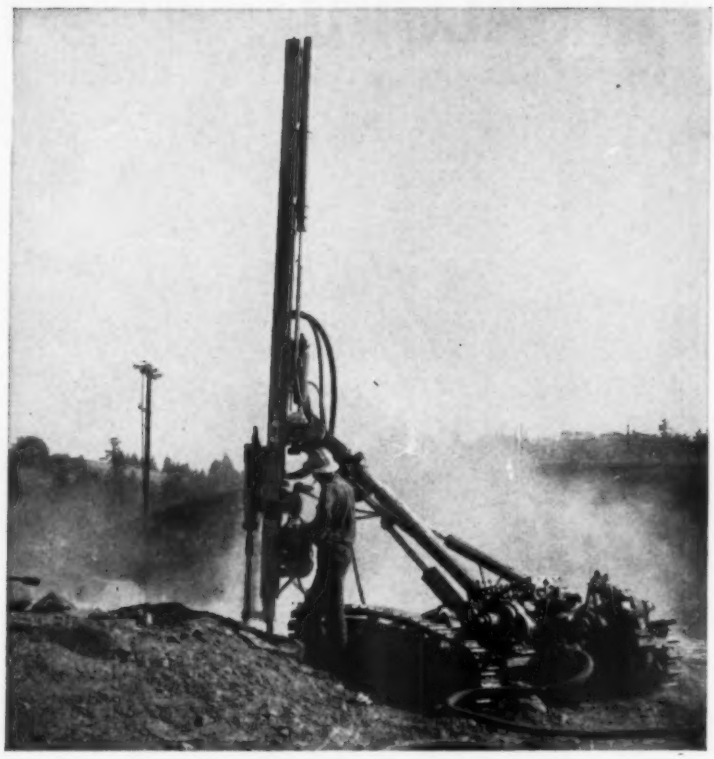
MORE SWING



...MORE REACH



...MORE FOOTAGE



with Gardner-Denver Swing-Boom "Air-Trac"®

TIME TO TALK TIME-SAVING

Gardner-Denver believes there's no substitute for men—it has been our philosophy of growth for 100 years. Your Gardner-Denver construction equipment specialist has helped many uncover ways to speed the pace . . . lower drilling costs. He's a good man to know. Get in touch with him soon.

Swings 11'10" . . . 2½' over both tracks Now drill more hole from one position . . . drill over a ledge from either side. Feed swings 11'10" at 45° elevation . . . moves to 2½' outside of each track with balanced stability.

Reaches to 9'6" height—for horizontal drilling Get better spacing of horizontal holes . . . reach to 9'6" for high breast holes.

Moves quickly . . . safely "Air Trac" is self-equalizing, self-stabilizing, with hydraulic track oscillation. Moves easily, safely over roughest terrain. Designed with an unusually low center of gravity for maximum stability. Long tracks and powerful crawler motors provide plenty of traction. "Air Trac" will pull its own compressor. Tracks available with rubber or steel pads.

Saves time . . . steps All controls conveniently located. Drilling and positioning controls grouped at the front of rig to save steps, setup and drilling time.

Pulls tight steel Powerful Gardner-Denver 5-cylinder radial air motor enables your driller to put the right pressure on the bit in all drilling situations . . . provides necessary pulling power to bring tight steel out of the hole.

Maintains hole alignment Easily handles in-line drilling . . . drilling in fitchery or fractured formations. Creep-free hydraulic boom keeps drill in position . . . track locks keep rig firmly in place in difficult drilling spots.

Drills fast, clean hole Gardner-Denver's line of powerful rock drills is most complete—six hard-hitting models to choose from.

Write for bulletin.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

FAST ON THE DRAW—

MASSEY-FERGUSON'S WORK BULL 204

moves in and out at a touch of the toe!

It's no secret that you can move in, load and dump with a Massey-Ferguson Work Bull 204 while ordinary tractors are still at the pile. That's because this 40-h. p. tractor has exclusive Instant Reverse with torque converter.

You simply press one foot pedal to go forward — another to go reverse. Acceleration is built in each pedal. Select one of four different gear ranges to fit your job requirements, and never waste time, power, or momentum in shifting, clutching, or pulling levers.

The Work Bull 204 and the famous Davis Loader are power-matched to each other — as are Massey-Ferguson's Scarifier-Scraper and Davis Backhoe. Compare . . . try . . . you're sure to buy!

INSTANT REVERSE

with TORQUE CONVERTER

no shifting—
no clutching—
no levers to pull

Why Wait? Set a Date—We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION
Block 1000 South West Street • Wichita 13N, Kansas

540,000 gallons of water used daily by sand and gravel plant!

MARLOW supplies water to meet full requirements

To supply water for their Pioneer and Simplicity washing and screening plant, the Nello L. Teer Company, Erwin, N. C., uses a Marlow 6G3S pump powered by an International-Harvester engine. The pump, located on the bank of a river, carries the water up a steep hill to the plant, a half mile away. On continuous operation, the pump delivers 54,000 gallons per hour, but *can* handle up to 66,000 gallons per hour during peak periods!

Fred Byrd, Superintendent of Operations for the Teer Company, said that the plant has a capacity of 1,400 tons per 10 hour day and uses 540,000 gallons of water. The plant produces sand and gravel up to 1¼ inches in diameter and is used on their own construction jobs as well as sold commercially to other construction firms. Serving the washing and screening plant is an Eagle Screw, Barber Green Conveyor Belts and a Telsmith Gravel Crusher.

Mr. Byrd is well pleased with the performance of his Marlow pump. He says it runs 10 hours a day without interruptions and gives him all the water he needs to meet his requirements.

Let Marlow help you solve your pumping problem. Write today for information on the complete line of A.G.C. rated pumps and famous Marlow Mud Hogs for handling muddy and trash-laden water. Ask for Bulletin CO-4 and the name of your nearest Marlow dealer.

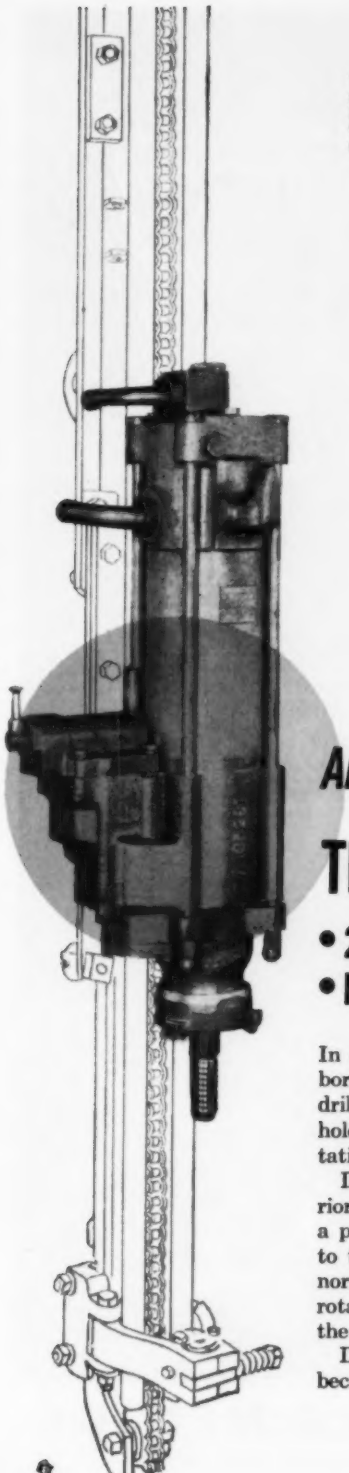
Marlow PUMPS

DIVISION OF

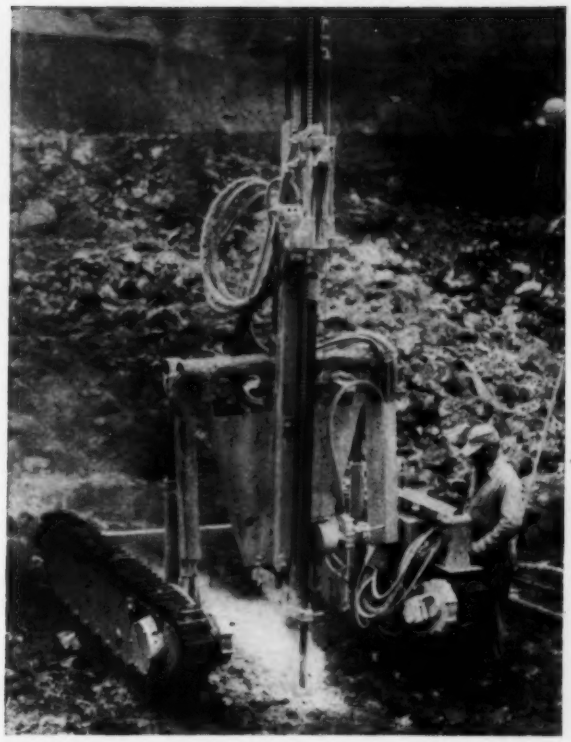
BELL & GOSSETT CO.

Midland Park, New Jersey

Longview, Texas ● Morton Grove, Illinois 7-294



The 450-DR is available on several self-propelled carriers, including the completely automatic TDM Trac-Drill shown at the right.



Another Joy First

The 450 DUAL Rotation Drill

- 25% Higher Drilling Speeds
- Faster Steel Changes

In competitive demonstrations of 4½" bore drills, the new Joy 450-DR not only drilled faster, but also finished blastholes which the conventional reverse rotation machines could not bottom.*

Dual Rotation, which made this superior performance possible, is provided by a powerful vane-type air motor geared to the chuck. It provides a booster to normal drilling rotation, and gives extra rotation power while actually reducing the strain on the rifle bar.

Dual Rotation will also cut your costs because (1) there is no hammering action while coupling or uncoupling—drill steel threads, couplings and striking bars last longer; (2) all four pawls in the 450-DR are used only for forward rotation, not two for drilling and two for reversing—excessive pawl wear is eliminated; and (3) with Dual Rotation, reversing is not rifle bar actuated, therefore rifle nuts cannot back off—less downtime.

Let us prove the superiority of the new Joy 450-DR Drill. Your nearest Joy Office or Distributor will be glad to arrange a demonstration of this remarkable new drill.

C 7577-316

*Competitive test results available upon request.

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA

Portable Compressors	Trac Drills	Tungsten Carbide Rock Bits	Hand-Held Rock Drills

JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

Famous Traylor Gyratory Crushers are manufactured in sizes designed to solve most reducing problems. From the mighty 60" TC to the TF Fine Reduction Crusher—Traylor engineers supply the finest Gyratory obtainable.

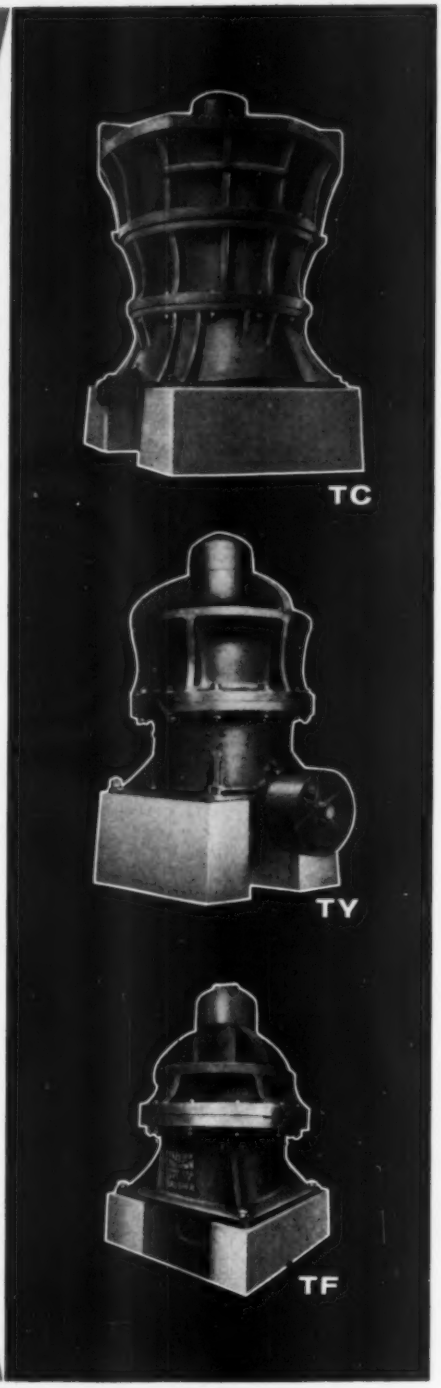
Traylor-made gyratory crushers

TC Gyratory Crushers are made in 7 sizes with feed openings 20" to 60" and capacities from 1,240 to over 32,000 tons per eight-hour day. For additional information, write for Traylor Bulletin No. 1126.

TY Reduction Crushers are built in 6 sizes from 1'—3" to 5'—6" and with feed openings from 3" to 22". For more information, write for Bulletin No. 8112.

Traylor TF Fine Reduction Crusher produces ⅜" to 1¼" material in large capacities. Over a half century of engineering experience is built into all Traylor crushing machinery. Write for Bulletin No. 127.

SEE THE TRAYLOR DISPLAY AT THE CHEM SHOW BOOTH NO. 495— NEW YORK COLISEUM NOV. 30 TO DEC. 4

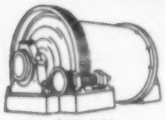


Traylor ENGINEERING & MFG. CO.

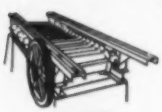
1305 MILL ST., ALLENTOWN, PA.

Sales Offices: New York — Chicago — San Francisco

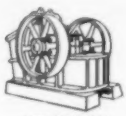
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P.Q.


BALL MILLS

ROTARY KILNS


APRON FEEDERS

PRIMARY GYRATORY CRUSHERS


JAW CRUSHERS

SECONDARY GYRATORY CRUSHERS

HERE'S THE FIRST SEMI-AUTOMATIC OPEN ARC WIRE FOR HIGH STRENGTH WELDS ON MANGANESE STEEL

WEAR-O-MATIC WH

Wear-O-Matic WH is the first 7/64" diameter open arc wire for semi-automatic application providing acceptable high strength properties for welding manganese attachments to manganese or carbon steels.

Here's a new wire providing welds of greater strength and ductility than 14% manganese weld metal that can be applied by the easier, more economical Wear-O-Matic open arc semi-automatic process. The balanced, high alloy content of the fabricated wire is sufficient to overcome the effects of dilution with manganese or carbon steel resulting in a weld deposit in the fully austenitic range. This, of course, provides a tougher, more crack resistant weld deposit.

Wear-O-Matic WH serves a dual role in that the exceptional physical properties that provide strong ductile welds also provide a tough, deformation resistant mass when used as a build-up alloy. The deposit develops a surface hardness of 47–48 Rc under impact providing exceptionally good wear resistance.

NEW NEW NEW NEW NEW

- **For impact and compression resistant attachment welds . . . specify WEAR-O-MATIC WH**
- **For tough, dependable build-up deposits . . . specify WEAR-O-MATIC WH**
- **For greater economy in all of your hard surfacing and maintenance welding, call on your Alloy Rods factory branch or distributor.**
- **Write for Bulletin HS232 for details and locations. Alloy Rods Company, P. O. Box 1828, York, Penna.**

NEW NEW NEW NEW

Alloy Rods Company

YORK, PENNSYLVANIA • EL SEGUNDO, CALIFORNIA

WHEN YOU RUN A **REICHDRILL** YOU'VE GOT A RIG THAT IS **ALL-HYDRAULIC** AND FEATURES **TOP-DRIVE**

Drillers get "more hole per hour with a REICHdrill" because . . .

REICHdrill Model T-650H, heavy truck-mounted drill for rotary or down-the-hole work. Hole size to 7⅝" in hard rock. Down pressure to 30,000 lbs.

Choice of other hole sizes and down pressures available. Crawler-mounted rigs can be furnished in all models.

ALL-HYDRAULIC TOP-DRIVE MEANS:

1. **Infinitely variable speed** of drill rotation from zero rpm to maximum rated speed of model—permits the right rotational speed for every formation.

2. **Safety torque release** which practically eliminates all chance of drill breakage . . . protects all drive components.

3. **Direct-drive to drill stem** eliminating power loss . . . no complicated transmission to wear or maintain . . . no rotary table.

4. **In and out of the hole faster** because no kelly bar is required.

5. **Operator can drill up as well as down** should bit become stuck.

And the REICHdrill offers these outstanding advantages: Dependable heavy duty CP Compressors supply plenty of air to suit demand . . . Fast-acting, ram-type hydraulic levelling jacks . . . CP "Air-Blast" Bits give you extra footage in the toughest formations . . . Angle drilling—operator simply sets correct angle and drills.

Write for full information on REICHdrills, today!

REICHdrill

Division: Chicago Pneumatic Tool Company

1439 ASH STREET, TERRE HAUTE, INDIANA

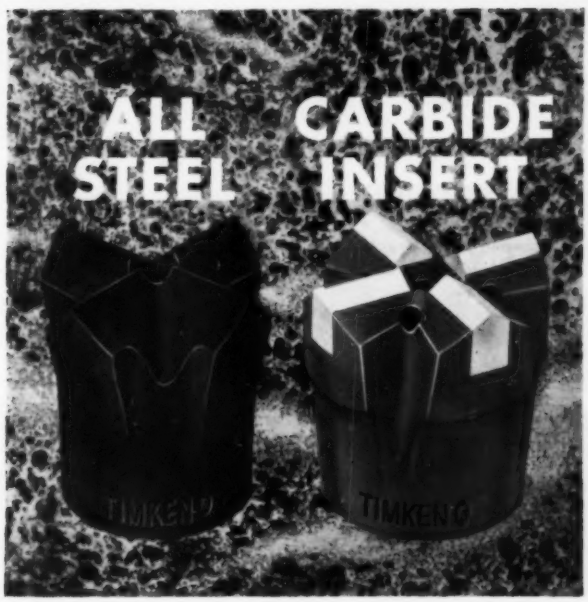
"We drilled over 5,000 ft., averaging 15 redresses per bit, with Timken® carbide insert bits"

Special report from Rogers Construction Company

LOCATION: U. S. HWY. 30, THE DALLES, OREGON

Operating conditions: Lava-Basalt

In converting part of U. S. 30 from a two-lane to a four-lane highway, Rogers Construction Co. of Portland, Ore., had to drill through Lava-Basalt. Holes in this very fryable rock varied from 25 to 60 feet. And for drilling on this very abrasive ground, Timken® carbide insert bits were a "natural". They set records. Some of the original 010 4½" bits have drilled well over 5,000 ft., averaging 15 redresses per bit.



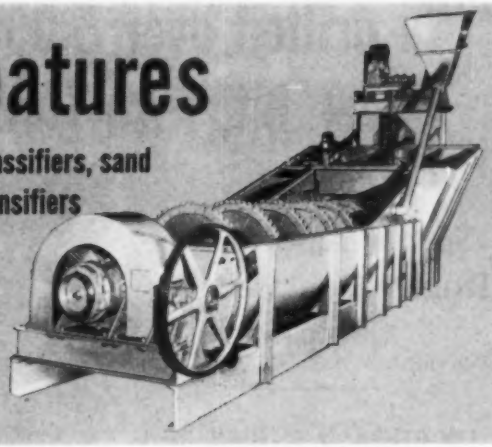
Which Timken Bit should you use?

In hard, abrasive ground, the Timken carbide insert bit gives you greatest economy. But in softer ground, use the low-cost Timken all steel multi-use bit. Both bits are interchangeable in the same thread series; you can switch bits as the ground changes. What's more, dozens of different Timken bits fit the same drill steel. And both types are made from Timken electric furnace fine alloy steel, have special shoulder unions to protect against drilling impact. Let us help you select the right Timken bit for your job. Call or write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

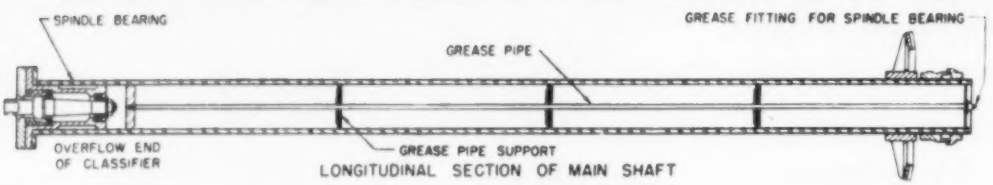
TIMKEN®
REMOVABLE ROCK BITS

Exclusive Akins Features

which assure low-cost, trouble-free operation of classifiers, sand washing classifiers, heavy media separators and densifiers



50 years of experience in the design, manufacture, and operating performance of spiral classifiers, heavy media separators and densifiers, has proven the importance of the exclusive mechanical features of the Akins machines... importance in terms of metallurgy, and in the economy of long, trouble-free operating life with minimum maintenance.



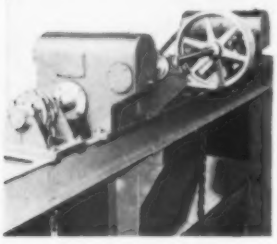
LONGITUDINAL SECTION OF MAIN SHAFT

SUBMERGED BEARING

The patented submerged bearing has proven its advantages of durability, trouble-free operation, and ease of maintenance.

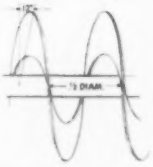
LUBRICATION

The submerged bearing is grease-gun lubricated through a pipe in the main shaft; thus the pipe is isolated from tank contents and protected against breakage. Grease fitting is at upper end of shaft for maximum convenience.



MECHANICAL LIFTING MECHANISM

The lifting device consists of chains, chain sprocket sheaves, and motor-driven or hand-operated reducer unit. Experience has proven this mechanical arrangement to be the most positive, with no possibility of slippage. Minimum maintenance. No packing glands or rods to become worn.



SPIRAL PITCH

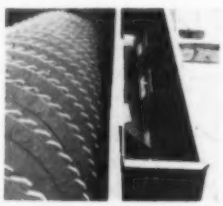
50 years of experience has shown that the half-diameter pitch gives maximum raking capacity and results in less slippage and less wear than advanced pitch spirals.

TANK SUPPORTS

Web beam substructure supports tank. There's no load to be carried by tank. This also reduces installation cost by eliminating need for extra sub-structures to support tank.

WEARING SHOES

Wearing shoes are made of various alloys, including Climax 42-A. Patented serrated wearing shoes are available for special applications. Special inner shoes are provided for heavy rake loads.



DRIVE

The bevel gear, V-belt drive has proven to be the most trouble-free and flexible. It permits mounting the motor, or motor-reducer, horizontally; and changing speeds quickly and inexpensively, by simply changing V-belt sheave ratio.

OVERFLOW BOX

An overflow box, with a pipe connection, is furnished as standard... requires only a single connection.

For complete information on Akins machines write for catalogs.

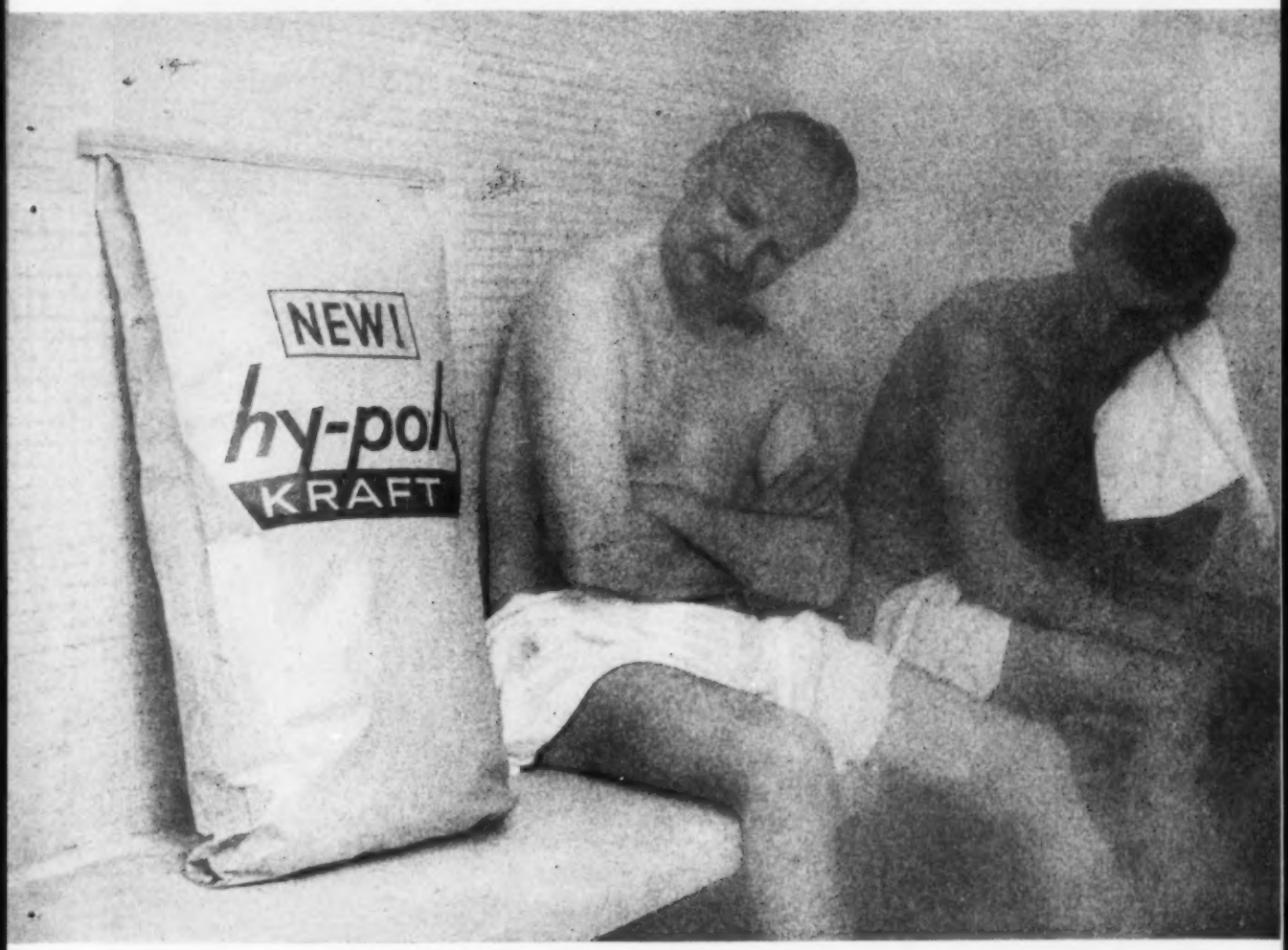
Manufacturing Division

MINE AND SMELTER SUPPLY CO.

DENVER 16	NEW YORK 17	SALT LAKE CITY 1	EL PASO
3800 RACE STREET	122 E. 42nd STREET	121 W. 2nd S.	1515 11TH AVE.

Licensed Manufacturers and Sales Agents in Canada, Australia, Sweden, England, South Africa
Sales Agents in Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the United States.

Now International Paper saves you $5 to $16 per thousand PE multiwalls!



Read why new humidity-proof "Hy-poly" kraft makes medium and low-density polyethylene sheets extravagant!

THE multiwall bag you see taking a Turkish bath in our picture contains *calcium chloride*.

We steamed this new Bagpak® multiwall in 95% relative humidity at 120° F. for 48 hours. (Unprotected, under these conditions, this chemical takes on 2½ times its weight in water in about an hour!)

But when we opened up the bag, the thirsty crystals spilled out as though they had been stored on the Sahara!

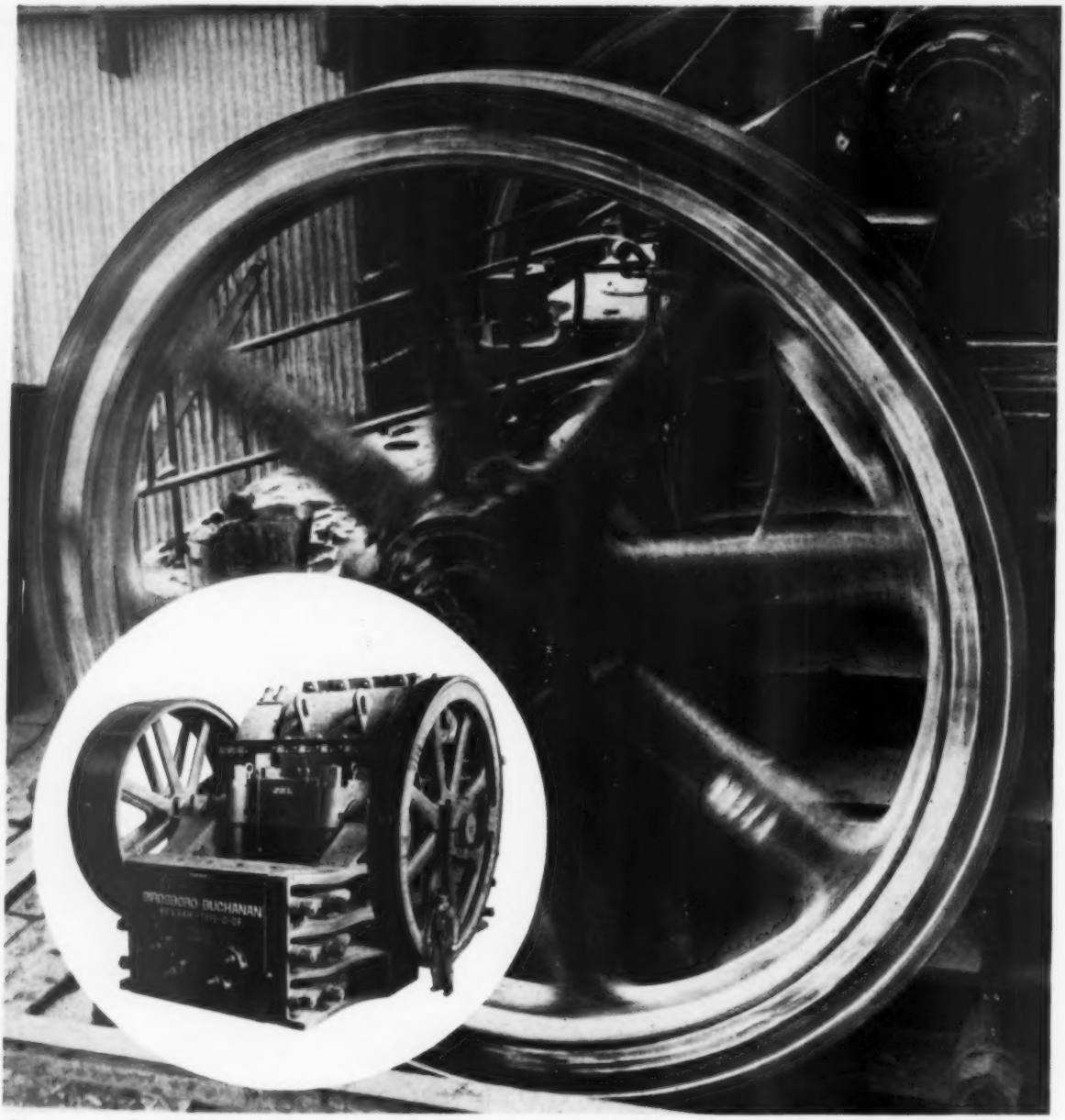
And Bagpak's new Hy-poly kraft *saves you money*. You stand to save from $5 to $16 per thousand multiwalls!

That's because new Hy-poly kraft is so superior to medium and low-density PE sheets that you get equal, if not greater, moisture-vapor protection from a coating approximately *half as thick!*

Extensive laboratory tests prove that this dramatic new barrier sheet is superior in *every way*. Write us today for samples.

See how calcium chloride protected by Hy-poly kraft Bagpak, pours after 48-hour steam bath!

Bagpak Division **INTERNATIONAL PAPER** New York 17, N.Y.



Speed Up Your Primary Stage Crushing... with a BIRDSBORO-BUCHANAN deep-frame crusher

Almost any primary crushing operation will realize new production economies. Birdsboro's Deep-Frame design assures positive nipping action, minimizes slippage and gives higher rate of reduction. The longer swing jaw with more acute angle gives you faster crushing to small sizes. Full range of sizes to suit any plant design. A Birdsboro representative can supply all details plus proved performance data.

Sales Department, Engineering Department and Plant: **Birdsboro, Pa.,** *District Office:* **Pittsburgh, Pa.**

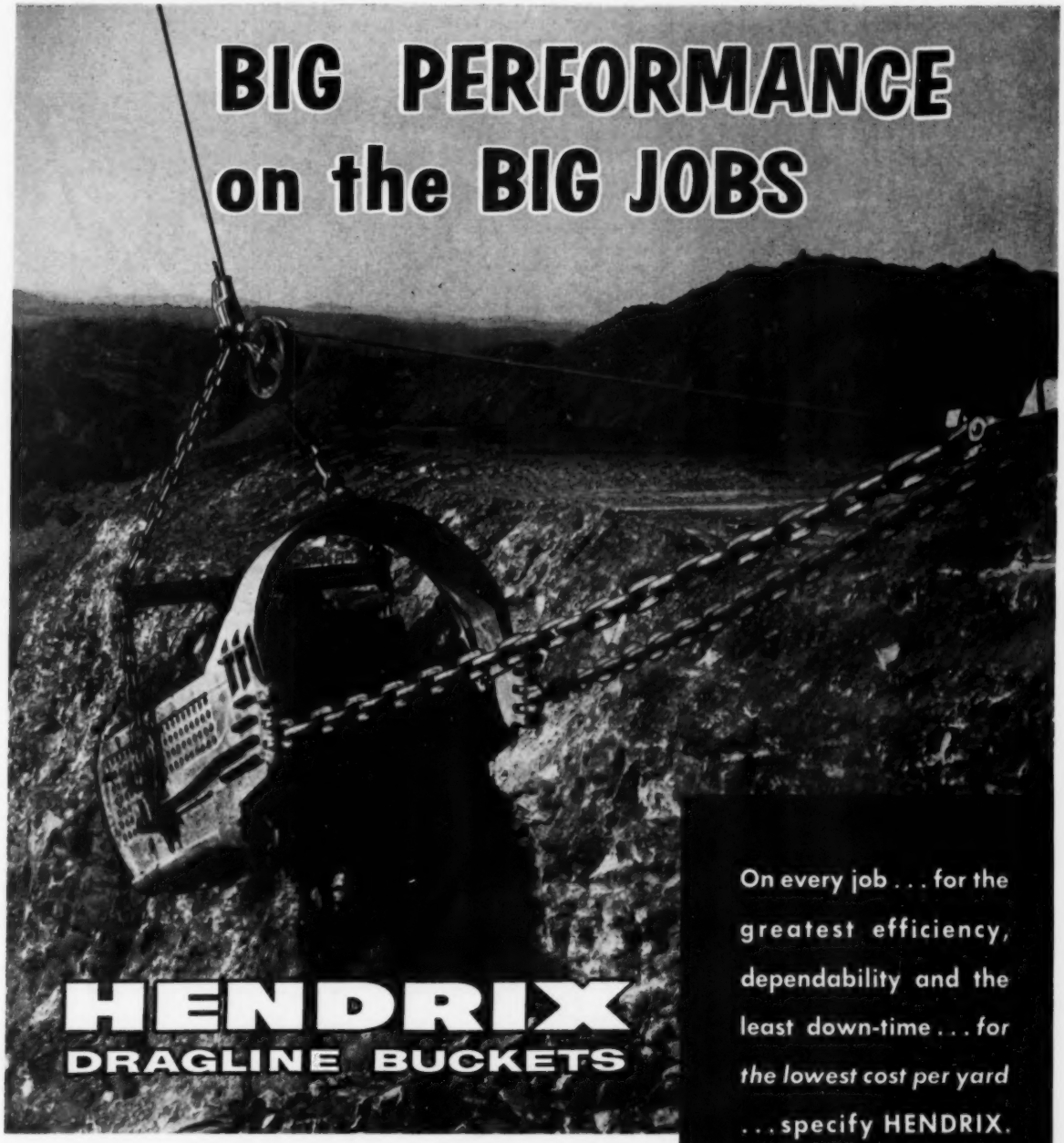
Canadian Representative & Manufacturer: **John Inglis Co., Ltd., Toronto, Canada**

World-Wide Agent Representation. **Contact home office for nearest representative.**

BIRDSBORO
STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

BIG PERFORMANCE on the BIG JOBS



HENDRIX
DRAGLINE BUCKETS

On every job . . . for the greatest efficiency, dependability and the least down-time . . . for *the lowest cost per yard* . . . specify HENDRIX.

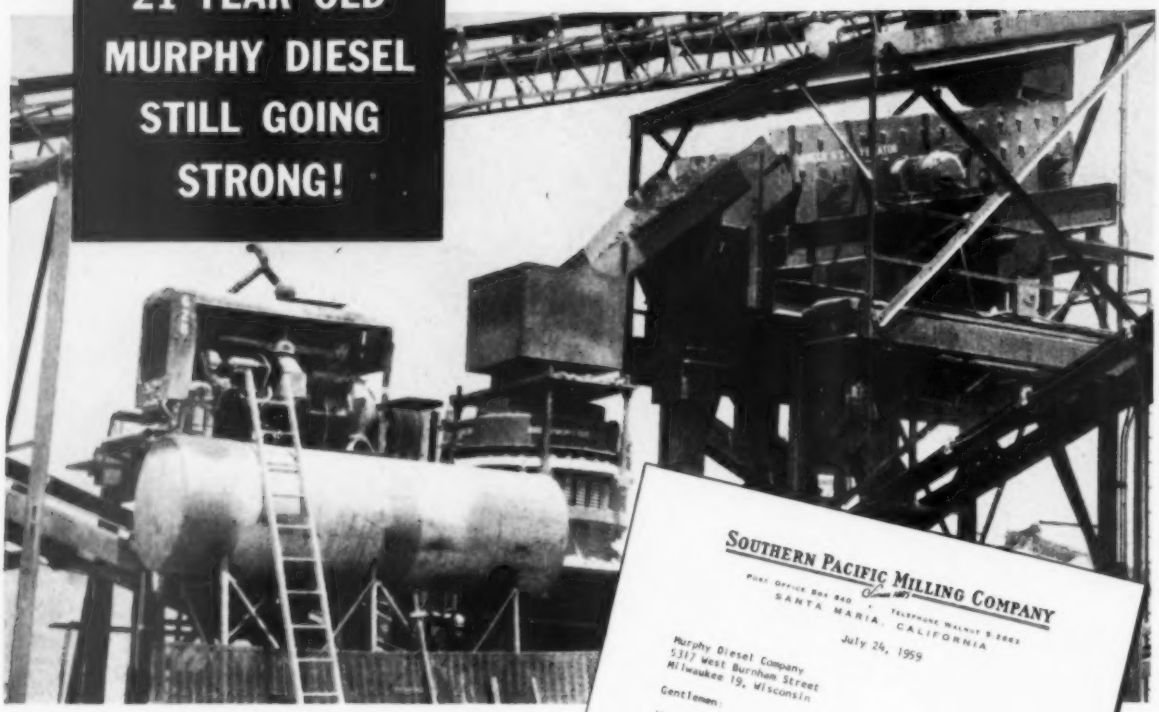
"A Type for Every Digging Purpose"...

¼ to 40 Cubic Yards
Perforated or Solid

Hendrix Lightweight Dragline Buckets

HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA

21 YEAR OLD MURPHY DIESEL STILL GOING STRONG!



SOUTHERN PACIFIC MILLING COMPANY
POST OFFICE BOX 840 TELEPHONE WALNUT 5-2661
SANTA MARIA, CALIFORNIA

July 24, 1959

Murphy Diesel Company
5317 West Burnham Street
Milwaukee 19, Wisconsin

Gentlemen:

We believe that with one of the earliest Murphy engines built, we have discovered the ultimate in diesel engine economy and dependability.

A year and a half ago, in assembling equipment to supply rock to various contractors helping to build the new missile base near Lompoc, Calif., we were in need of 150 horsepower for a new four-foot standard head Symons cone crusher. After checking an old MDX which we'd had on hand for a number of years, we decided to use this engine, concluding that we might get a month or two of use from it; actually, we were planning purchase of a new Murphy Diesel engine.

This old MDX engine is still running -- we have had no service difficulties of any consequence -- the fuel economy has been nearly unbelievable in comparison to normal standards. I personally have long been a believer in Murphy Diesel economy, dependability, and quality, but this experience with the engine is the finest I have ever seen.

Very truly yours,

SOUTHERN PACIFIC MILLING COMPANY

Robert O. Littlejohn

Robert O. Littlejohn
Northern Division Manager

ROL:lm

Proof that Murphy Diesel saves you money

This early model Murphy is still earning its way! According to the owner, it is operating efficiently with fuel economy that is "nearly unbelievable in comparison to normal standards." The experience of Southern Pacific Milling Company with this 21-year-old Murphy is the best evidence that operators who want "the ultimate in Diesel engine economy and dependability" are wise to choose Murphy.

Twenty-one years of improvement in diesel engine design and construction make today's Murphy Diesel first choice for always-dependable, low-cost operation.

MURPHY DIESEL

MURPHY DIESEL COMPANY

5307 W. Burnham St. • Milwaukee 19, Wis.

SALES—PARTS—SERVICE throughout the Nation

HEAVY-DUTY POWER FOR CONSTRUCTION

Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

418-RO

SOMETHING EXTRA!!

SUDDEN SOUTHERN SERVICE

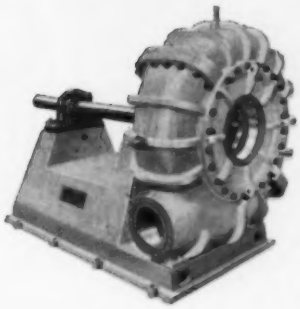
Thomas DURABLE Dredge Pumps, of course, give much longer service without need of repairs. But when you need repair parts or engineering service, you get them in a hurry! !

That's what users of Thomas Pumps throughout the U.S.A. have gotten into the habit of calling: "SUDDEN SOUTHERN SERVICE".

Sand and Gravel operators (and Dredging Contractors too) have repeatedly told us that not only do competitive pumps require more repairs more often, but that repair parts are frequently slow in delivery—hard to get.

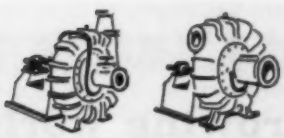
AMPLE STOCKS OF THOMAS REPAIR PARTS ARE MAINTAINED by us FOR IMMEDIATE SHIPMENT. The Thomas Organization is alert to get them moving to you without delay. Thomas Engineers with long background of practical experience and technical training are ever-ready to get on the job to help you solve engineering problems—to help you get maximum production.

That's "SUDDEN SOUTHERN SERVICE" and if you're not a user of Thomas Pumps you've never experienced it. As one Thomas Pump enthusiast so aptly put it: "You don't know what you're missing."



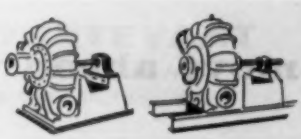
Modern pump design and GENUINE, DEPENDABLE THOMAS NI-HARD in all wearing parts, makes an unbeatable combination. Add SUDDEN SOUTHERN SERVICE and you'll know why "you cannot buy at any price, a more durable pump for sand and gravel—you cannot buy one that will make you as much money! !"

(Available in sizes from 6" through 16".)



THOMAS FOUNDRIES Inc.

P. O. BOX 1111, BIRMINGHAM, ALABAMA



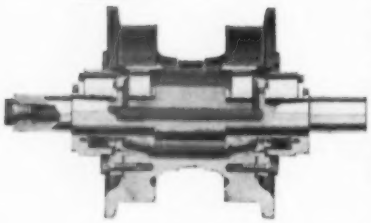
Why waste time greasing track on any of your tractors...

when you can have

Permanent Lubrication CERTIFIED

The Positive Seal
PERMA-SAFE
Wheel

for truck wheels, front idlers and support rollers on all models of Allis-Chalmers crawler tractors



Now...Allis-Chalmers announces PERMA-SAFE lubrication for all models in its crawler tractor line... climaxing more than 20 years of constant research and on-the-job experience with Positive Seal, tapered roller bearing design. Now you can forget about track-level greasing...convert that lost time to profit time. Allis-Chalmers, pioneer of extended lube intervals, lets you take this big step ahead with complete confidence.

See your nearby Allis-Chalmers dealer for the full story now. Allis-Chalmers Construction Machinery Division, Milwaukee 1, Wisconsin.

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...power for a growing world

Legal Decisions

On Industry Problems

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Legal Owner of Patent

A FEW weeks ago when I was talking personally with a convention group of officials and employees of quarry companies, the following legal problem was presented: "Under what rule of law can an employee of a quarry, or other corporation, have full and complete ownership in a patent on an invention he conceived and perfected?"

Until recently, the higher courts held that the inventor was always the sole owner of all patents applied for and issued in his name, although the invention was perfected on the employer's time and with the use of the employer's equipment and tools. (See 119 U. S. 226).

However, the new patent law is different. In fact, a recent United States Supreme Court decision overruled the old decisions and established the present law that if a patent is granted in the name of an employee, and the patent is on an invention conceived, experimented, and perfected on his employer's time, while he was being paid to invent things, the *employer* is the legal owner of the patent.

Moreover, the Supreme Court of the United States has laid down law that employment contracts are valid which contain a clause to the effect that the employee will assign *to his employer* all inventions and patents conceived and obtained from the date of his employment to its termination. Therefore, the employee is obligated to assign to his employer inventions which he may have conceived, perfected, or otherwise invented at his home and on his own time. Also, see *Parts v. Peck,* 264 U. S. 53, a decision which changed the old law so much that now an employee who perfects an invention in his employer's plant, or while being paid by his employer, has no legal interest in the patent.

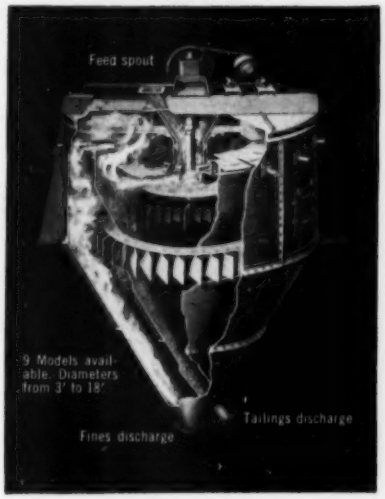
Rescind Contract Promptly

As previously mentioned in these pages, if a party to a contract continues to function without complaint after the other party has committed a breach, the former automatically loses his legal right to rescind or to recover "extra" payment for added expenses incurred.

For instance, in *Schnepf v. McNamara Company,* 93 N. W. (2d) 230, the testimony showed that a contracting corporation signed a contract to construct a sewer for a city at a stipulated price, to complete it by a certain date and to pay a penalty for each day's delay beyond that date.

One Schnepf made a subcontract under which he was to haul away all dirt excavated on the job and to haul back sand from a specified location to be used as backfill. The contract stipulated that Schnepf was to be paid $22,000 for this work, provided that he could obtain the sand from a location specified in the contract. Within three weeks after Schnepf started on the job, he discovered that he would have to procure backfill sand from a different source because the sand taken from the area mentioned in the subcontract was rejected as unsuitable by the highway department. The location of the new source was at a greater distance from the sewer construction job. For a number of days the backfill sand was hauled from the new location by Schnepf, who made no claim of breach or termination of the written contract.

In Cement and Aggregates the Word for Air Separation is "Sturtevant"



in cement . . .

Sturtevant Air Separators make possible highly efficient closed-circuit systems. Large circulating loads increase output, eliminate overgrinding. Ball and lining life lengthens, power costs are lowered. Top quality cement results from precise control of finenesses. Standard 16 ft. Sturtevants deliver raw fines up to 70 tph, finished fines up to 260 bph.

in aggregates . . .

Sturtevant Air Separators classify sand without water, clean sand by de-dusting it. Pre-classification by air can also increase screening production by removing screen-blinding fines. In blending operations, Sturtevants select desired fines from grinder throughput. This graded product is then used to overcome fineness modulus deficiencies.

Send for Air Separator Bulletin No. 087.

STURTEVANT
MILL COMPANY
104 Clayton St., Boston, Mass.

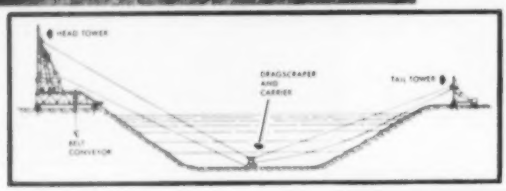
Crushers • Grinders • Micron-Grinders • Separators
Blenders • Granulators • Conveyors • Elevators

Enter 185 on card, page 167

Tough Digging, Long Hauls... Routine Jobs for Sauerman DragScrapers

240-Ft. Bank... 350-Ft. Haul

This mobile Sauerman Tower Excavator digs 480 yds. per hr. on an average haul of 350 ft. from a high bank to a portable field hopper. The 12-yd. Crescent DragScraper operates between steel head and tail towers. The towers are mounted on two sets of railroad tracks and ride on four sets of trucks. DragScraper power is supplied by two hoists mounted on the head tower. One hoist operates the load and pull-back cables, the other is used to tension the track cable. The hoists are controlled by one operator located in the cab on the tower. The load cable handles over 400,000 tons of material before replacement.



Drawing shows typical mobile tower excavator digging in wet pit.

75 Ft. Under Water... 800-Ft. Span

A 5-yd. rapid-shifting DragScraper supplies about 200 yds. per hr. to the plant hopper in background. Bridle tower in foreground is one of two supporting the bridle shifting cable which is controlled by the third drum of the Sauerman hoist. Lateral shifting of the DragScraper's line of operation is readily accomplished by power-shifting the trolley and tail block to a new position on the bridle cable. The DragScraper is digging 75 ft. under water and the operating span is 800 ft. from head frame to the bridle towers. Over a million tons have been excavated from this pit. The DragScraper often operates 24 hrs. a day to handle contract demands.

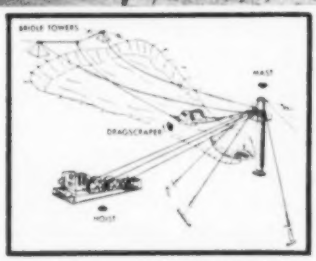


Diagram shows details of Sauerman rapid-shifting DragScraper.

Sauerman machines dig and haul in one continuous operation . . . work on high bank, dry pit or under water . . . handle most bulk materials. Consult Sauerman engineers about your job. We will promptly supply appropriate literature.

SAUERMAN BROS., INC. 634 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Towline Cableways • Durolite Blocks

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Some time later Schnepf demanded that the corporation pay him an additional sum of money above $22,000 specified in the original contract because he had to haul the sand needed by the corporation a greater distance than was originally contemplated.

It is interesting to observe that as Schnepf had made no complaint immediately and at the time he discovered that he could not obtain sand from the location specified in the original contract, the higher court refused to award Schnepf any additional or "extra" payment for hauling the sand from the new location, which was considerably farther than the original location of the sand stated in the original contract. This court said:

"Plaintiff (Schnepf) continued operations under the written contract for a number of days after such change of location without protest and without claiming breach of contract or asserting its termination. By continuing thus to perform and to accept payments under it, he lost his right to terminate the contract and declare it forfeited."

Avoid Damages for Injuries to Children

All higher courts agree that a contractor is liable in damages if he keeps on his property things attractive and dangerous to children.

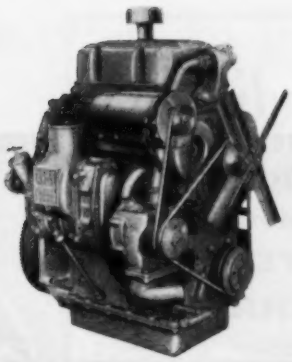
For instance, in *Wayne v. Williams*, 315 Pac. (2d) 919, the testimony showed that one Williams owned property on which he had placed a dangerous metal frame. The testimony showed that a number of children were playing with the metal frame, and that one day it fell on a small child, effecting serious injuries. The child's parents sued Williams for $50,000 damages.

During the trial the parents proved that Williams knew that the dangerous metal frame was on the property and, further, that Williams knew that children were accustomed to play on and near the frame.

In view of this testimony, the higher court held that Wayne's parents could recover damages from Williams, saying:

"The evidence showed that appellant (Williams) was chargeable with knowledge that the children

HOT



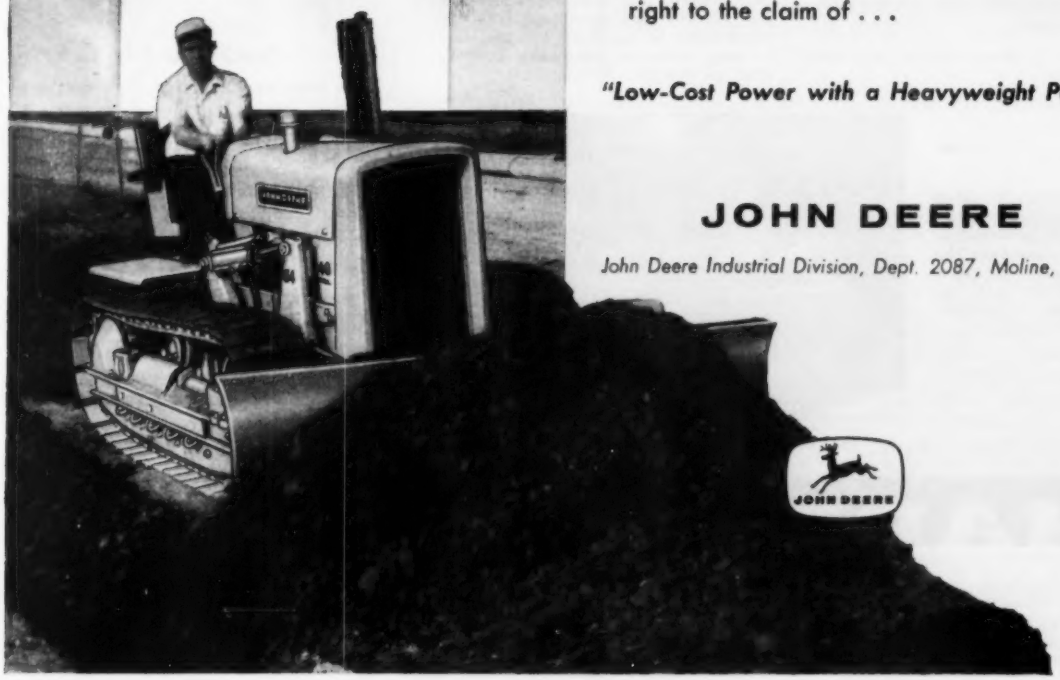
A demand item—in less than a year! In the short time since its introduction, the JOHN DEERE "440" CRAWLER with field-proved DIESEL ENGINE has established a new high standard of performance for industrial units in its class.

In building construction, logging, public works and other industrial fields, the new "440ICD" is now daily proving its right to the claim of . . .

"Low-Cost Power with a Heavyweight Punch"

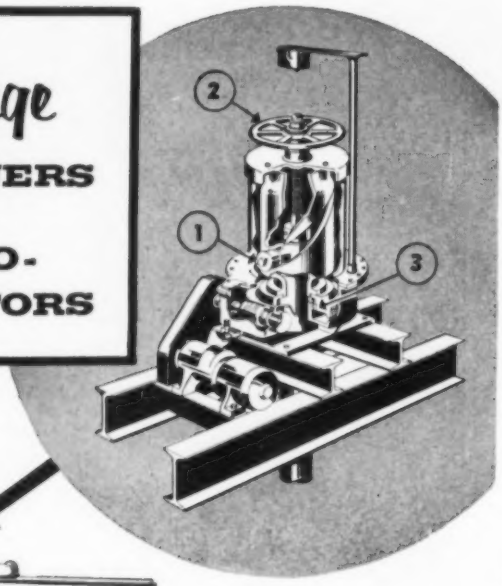
JOHN DEERE

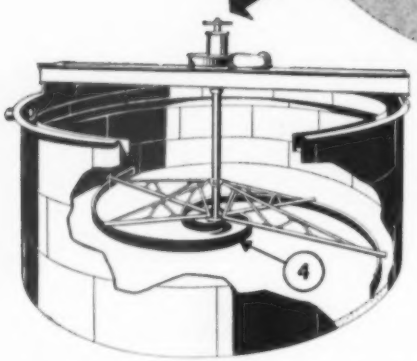
John Deere Industrial Division, Dept. 2087, Moline, Illinois



Hardinge

THICKENERS and HYDRO-SEPARATORS





. . . for all clarifying, thickening and de-sliming operations.

For flotation concentrates thickening ahead of filtering—or for tailings disposal or reclamation, Hardinge Thickeners provide:

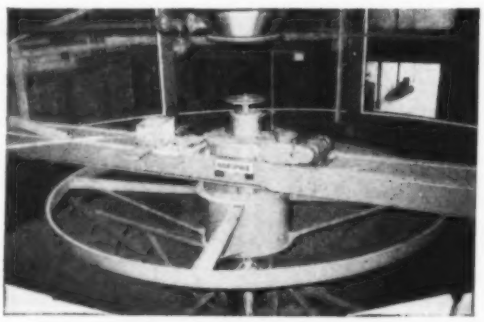
1. "Auto-Raise" to avoid lost production from overloads.

2. Manual or power raise to supplement "Auto-Raise."

3. Replaceable ring-type ball bearing support for rotating mechanism.

4. Spiral rakes for maximum underflow density.

Also available are froth rakes for froth-free overflow and superposed type tank construction for minimum floor space and building economy. Complete specifications on request. Bulletin 31-E-8.



A 35'-diameter Hardinge Superposed Thickener installation in a Canadian lead-zinc concentrator. The sludge outlet for the upper unit can be seen at the top of the picture. Note froth ring on lower unit.

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played in the area where the frame lay and that it resembled in appearance the metal frameworks often seen on playgrounds. The proof shows a right of recovery based upon negligence in allowing a dangerous instrumentality to lie about unsecured and unguarded where the tenant's children customarily played."

Unlicensed Contractor Has Lien

Considerable discussion has arisen from time to time over the legal question: "Can a cement contractor who has no license to perform construction work sue and recover payment for labor and materials supplied to a property owner?"

For instance, in *Whipple v. Fuller*, 299 Pac. (2d) 837, a state law was litigated which provides that all persons and contractors who have furnished materials or performed labor upon any project shall have a direct right against the property owner to collect payment of the agreed contract price.

The higher court held that unlicensed contractors can collect payments for work performed and materials furnished, saying:

"There is no limitation in the statute on the language used. Unlicensed contractors or subcontractors are not exempted from its benefits."

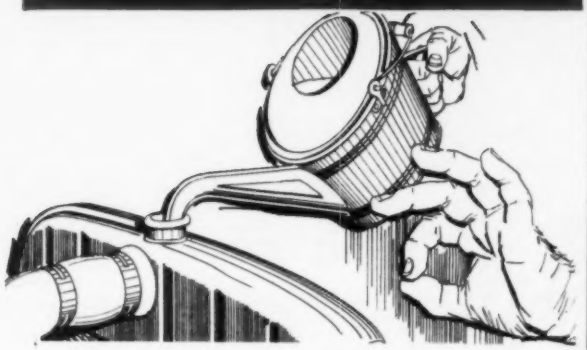
Truck Kills Boy

A few weeks ago a higher court clearly laid down law to the effect that if a person is injured or killed by a motor truck, no damages are allowable unless convincing testimony is given which proves negligence on the part of the truck driver.

For comparison, see *Ritter v. Andrews Concrete Products Company*, 93 N. W. (2d) 787. In this case a boy was riding a bicycle when a dog suddenly ran into the front wheel of his bicycle. In attempting to keep his balance, he turned the bicycle and ran against the side of a truck and was killed. The testimony showed that the truck was owned by the Andrews Concrete Products Company and that it was a ready-mix concrete truck, 24 ft. long and 8 ft. wide and weighing about 13 tons.

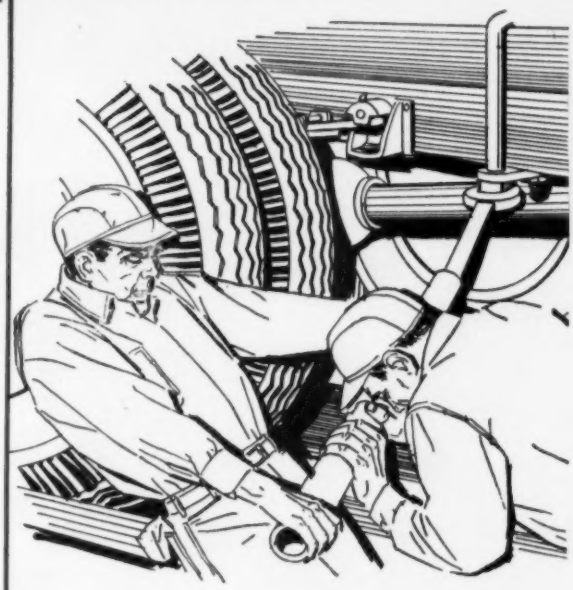
LUBE LOGIC

Four ways to lighten your load this month



NEW WAY TO KEEP RUST OUT OF YOUR RADIATOR

Rust in your cooling system can start damaging your engine long before your radiator blows its top. It will slow up water circulation, which will raise engine temperature, which will raise havoc with engine performance. Don't let it start. A little Texaco Soluble Oil C in your radiator and your troubles are over. Your TAE* can give you the details.



HOW TO AVOID THAT FROZEN BOLT

Ever spend six hours fighting a U-bolt that's decided to corrode itself tight? We've seen it happen, and it's an unforgettable experience—especially when we told them they could have ducked all that trouble for the price of a pack of gum. When they let us back in, we showed them how just a dash of Texaco Threadtex could keep their bolt rust-free permanently. Ask your TAE* for a demonstration.

EASY WAY TO AVOID BATTERY DEPOSITS

Don't let battery deposits climb up your cables; you may want to get them off someday. Easiest way to keep this from happening: paint battery terminals with Texaco Rustproof L. One application will keep them deposit-free for months.

*TEXACO AUTOMOTIVE ENGINEERS

Every month or so we'll bring you a batch of "sleepers"—little angles, so easy to overlook, where big savings in time and money can be made. But month in, month out, your local Texaco Automotive Engineer is the best source of money-saving lubrication ideas. Don't forget that "lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

TUNE IN: TEXACO HUNTLEY-BRINKLEY REPORT, MON-FRI.—NBC-TV

TEXACO

Throughout the United States

Canada • Latin America • West Africa

Indiana crushed stone company and a new approach to gondola loading

6 yd Michigan Tractor Shovel hauls own load... alone replaces standard 5 machine operation

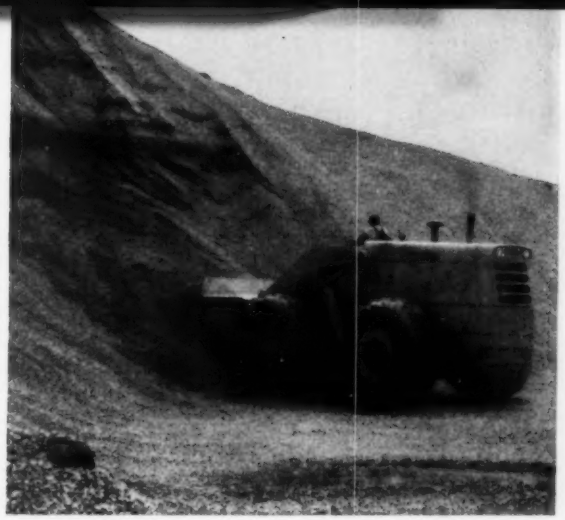
By replacing a ¾ yd swing shovel, two 15 ton dump trucks, a hopper, and a conveyor with *one* Michigan Model 375A Tractor Shovel—this southern Indiana quarry has substantially slashed equipment investment for loading railroad gondola cars.

Not long ago, the firm's president and his superintendent were talking over ways to increase loading efficiency and free some present equipment for work elsewhere. The firm was producing everything from aglime to No. 63 Illinois-size crushed stone. This meant stockpiles were spread out, loading cycles were often 1,000 to 2,000 ft. Switching from one stockpile to another with the swing shovel took valuable time. So did handling the material *three* times (by shovel, truck, and conveyor) in order to move it from stockpile to gondola.

Was there a better way? The company had long been impressed with the operation of their two 2¾ yd Michigan Model 175A Tractor Shovels used for loading trucks. Maybe a bigger Michigan, say with a 6 yd bucket, could replace the shovel-truck-conveyor system they were using? They called their Michigan Distributor.

323 tons/hr over 1,800' cycle

Deeds Equipment Company, Michigan Distributor in Lawrence, Indiana, brought out the big Model 375A, 335 hp Tractor Shovel. This Michigan, its 6 yd bucket and 30,000 lb lift capacity, easily scooped 11-ton loads of 3/8" stone. Travel was made over typical 1,800 ft cycles . . . and the material dumped directly into the railroad gondola cars. Time and again the Michigan made the trip and at the end



of an 8½ hour day, had traveled 85 miles. Output totaled 2,750 tons of crushed stone, loaded into 35 gondolas of the 60 to 75-ton class. And, the Michigan *could* load, *with equal ease*, from any one of the many stockpiles.

Production like this sold company officials on the Model 375A and this new method of gondola loading. Typical output since purchase of the Michigan has averaged 2,500 to 3,000 tons a day. Machine investment for this operation has been cut in half. The swing shovel has been released for stand-by duties and the two trucks put to work hauling to the crusher.

Another phase of the operation has a conveyor loading direct from the crusher into the gondolas on a second spur. "The Michigan is loading out stone faster than this continuous-flow conveyor," says the supt. "It now loads better than 50% of all rail stone shipments from the plant."

Loads quarry rock too

"Our respect for the Michigan has grown too," the supt adds. "A breakdown of our 3 yd rock shovel in the quarry pit was threatening crusher production 'till we sent the Model 375A down there. It did a competent job, and we've been using it in pit emergencies ever since."

Even has free time for haul road work

The crew learned early that the Model 375A's 25 mph speed could produce free time for itself . . . were quick to experiment with its capabilities as a haul-road maintenance machine. Now, when it isn't busy loading gondolas or trucks, it cruises the firm's 150 acre work area grading and compacting the two miles of access and haul roads. This job was formerly handled by a motor grader and occasionally a tractor-drawn roller.

Looking at the future

The firm's supt says, "After seeing the job the Michigan is doing for us now, and its proven dependability and speed, I believe we're headed for a 60 car-a-day production with the Michigan. This would be just twice what we were doing the old way."

No obligation demonstration

Why not see what a Michigan will do *on your job?* There are eight models to choose from—16 cubic feet to 6 cubic yards, 3,000 to 30,000 lb lift capacities. Pick the model you want to see and call us. We'll be glad to give you a "no obligation" demonstration.

CLARK EQUIPMENT

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road, Benton Harbor 43, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

Enter 190 on card, page 167

Austin plastic connectors provide a quick fuse hook-up. Simply thread fuse from shot hole through length of connector and press trunk line into grooved slots. Then return branch line through end of connector on other side of trunk line and pull tight.

AUSTIN
Detonating Fuse

promotes blasting efficiency

Filled with a high explosive core, Austin Detonating Fuse possesses sufficient strength and speed to initiate an entire column of explosives . . . connects all holes with an effective detonating agent.

Austin Detonating Fuse is easy to handle, too. It's light in weight and flexible with a tough, waterproof coating that won't crack, chip or peel when being laid.

3 types—There's a type of Austin Detonating Fuse for virtually any purpose. Type 60 is standard. Type 100 is more powerful and for less sensitive explosives and blasting agents. Type 175 is for use with uncoated ammonium nitrates.

All 3 types are insensitive to shock, abrasion and strong electrical currents.

AA-9574

USED IN 1833 AUSTIN & EVER SINCE

AUSTIN
POWDER COMPANY
CLEVELAND 13, OHIO

explosives ◆ ammonium nitrates ◆ primers ◆ detonating fuse
permissibles ◆ blasting supplies ◆ AP drill heads and bits ◆ mine tools

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In subsequent litigation, the higher court refused to hold the Andrews Concrete Products Company liable in damages for death of the boy, saying:

"The jury might well find that but for the dog the boy and the truck would have passed in safety."

This court explained that the driver of a motor vehicle need not anticipate unusual conditions to avoid injuries to pedestrians and other persons.

Must Eliminate Vibrations

A few weeks ago I received an interesting letter from an official of a cement company, reading in part, as follows: "Recently certain occupants of residences located close to our plant have demanded that we reduce vibrations caused by our diesel engines. The lawyer who represents the residence owners stated that operation of our diesels caused nearby homes to vibrate, and that it is our legal duty and obligation to install electric motors to eliminate these vibrations. Is this so?"

All courts agree that every citizen has a right to the free and unmolested enjoyment of his home. Hence, vibrations in the air or otherwise, produced by explosions which cause the shaking and jarring of homes will be prohibited by the courts, particularly if the user can substitute something that will not annoy owners of nearby homes.

For example, in *Warren Company v. Gruesser,* 209 S. W. (2d) 817, it was shown that a company is engaged in the business of cutting and dressing stone used principally in buildings. The machinery used to cut and dress the stone is operated by electrical power which is generated on the premises by two diesel engines, one a 325-hp. and the other a 100-hp. unit.

The owners and occupants of 15 dwellings nearby filed suit to abate what they charged was a "nuisance" caused by the operation of the two diesel engines. It was contended that the diesel engines used by the company to generate electricity caused dwellings in the neighborhood to vibrate, and interfered with the "comfortable enjoyment" of these homes by the occupants.

During the trial the property owners proved that commercial

Enter 193 on card, page 167 ➔

Four Michigan Tractor Dozer models are now available . . . this 165 hp size, 262 hp, 335 hp, 600 hp.

Rock quarry cuts repair bills 60%

Company records show rubber-tire Michigan Dozer also has reduced cleanup time 50% over track-type machines

"Like many other stone quarries, we sure used to be unhappy about track maintenance," says G. E. McLeer, vice president, Ohio River Stone Co, Prospect, Kentucky. "Rails alone used to cost us hundreds of dollars per year for replacement . . . plus several man-days of labor per change. No more. Our rubber-mounted Model 180 Michigan Tractor Dozer has run a year now. Naturally, no track problems . . . and no tire replacement either. Looks like original treads will last another year easily. Then, we expect to recap . . . and repeat recap. The savings should be at least 60%."

Excellent performance of Michigan Tractor Shovel echoed in Dozer

"Track wear wasn't the only reason we changed over," McLeer continues. "We chose the Michigan *Dozer* because of our excellent experience with our three Model 175A Michigan Tractor *Shovels*. Their all-Clark power trains really stand up. The Dozer's power train does, too. In its year of operation, the dozer has lost maybe 25 working hours—but that's all!

¼ mile move takes 2 minutes

"Production was another of our aims. The Michigan gets around much faster than the crawlers. In emergencies, for instance, we drive it the 20 miles between our two main quarries under its own power. After all, it's got a top speed of 27 mph, with good visibility, good brakes and power steering.

"Moves in any one quarry aren't nearly as long, but they're virtually continuous. Typical ¼-mile trip takes only 2 minutes . . . half to a third of crawler time. And, of course, the saved minutes go into productive work so necessary with increasing production demands.

"Our time studies show the rubber-tired Dozer *moves more material* on almost all jobs too — 50 per cent more when dressing stockpiles than a track-type machine. The reason? The Michigan moves *just as much* with its 10-foot dozer blade *per load*, yet *moves more loads per hour*. Speed advantage is mostly in faster backup, faster shifting. You don't have to stop to change speeds; just move a short-throw lever. No foot-clutching is necessary, ever."

Jack-of-all-jobs

Michigan Model 180 Tractor Dozer is "work-horse" of the main Derby Company quarry. Unit:

1. Takes about ½ hour to clean quarry floor after each shot.
2. Three to four times a day cleans up around two shovels: one on rock, one on stripping. Total work time, about 1½ hours per day.
3. Once a day, cleans spillage from 2 miles of truck roads.
4. Cleans spillage under crushers and aggregate bins.
5. Shapes nine rock stockpiles.
6. Cleans rock and dirt after stripping and before drilling.

Distributor service praised

"If any of our Michigans go down, we call our distributor (Emmett C. Watson Co of Louisville), and his men come right out," says McLeer. "Very seldom do we have to wait for parts and we get good warranty service."

You can get the same fast, low-cost help from *your* Michigan Distributor. Their good service is an important reason for the sale of over 8,000 Michigan rubber-tire units since 1954. Call them soon . . . they're good friends to know.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road,
Benton Harbor 4, Michigan
In Canada: Canadian Clark, Ltd.,
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electricity was available and that its use would eliminate the vibrations.

In view of this evidence, the higher court ordered the stone company to substitute and use commercial electricity, instead of the diesel engines, saying:

"The continuous jarring and injury to plaintiffs' houses render their occupancy unpleasant . . . Under the evidence here, the nuisance is continuous and seriously interferes with the comfortable enjoyment of homes."

Law of Legal Fixtures

A recent higher court decision applies exactly to a legal question asked by a reader who wants to know what fixtures and equipment installed in a mortgaged or leased building can be removed therefrom by the owner, lessee, or mortgagor.

The latest higher court decision involving this important law is *First Nat. Bank v. Nativi*, 49 Atl. (2d) 760. The testimony in this case showed that one Booth operates a granite cutting and processing business. Compressors and diesel motors had been used to furnish air and electric power for operation of Booth's machinery and equipment. Booth mortgaged his real property to a bank and soon afterward purchased an air compressor and the two motors, which were installed in the building. Concrete bases were constructed on which to mount the compressor and the motors in order to lessen vibration.

In subsequent litigation, the bank contended that Booth could not remove this new equipment from the premises, although it was not on the property when the mortgage was signed.

It is interesting to note that the higher court held that the newly installed equipment is a "legal fixture" which belongs to the bank on foreclosure of its mortgage, although it was not on the premises when Booth mortgaged the real property to the bank.

This court held further that if a building, real property, or premises are specially adapted to certain uses, all machinery and equipment attached thereto remains thereafter a part of the real property, and it cannot be removed by either an unpaid conditional seller, or the property owner who subsequently sells or mortgages the property, or the lessee.

Validity of Truck Taxation

Considerable discussion has arisen over this legal question: Is a state law valid which exempts small motor trucks from taxation?

A few weeks ago a higher court answered this legal question in the affirmative, and explained that complete fairness would require that a state tax formula vary with every factor affecting appropriate compensation for highway use.

For example, in *McCreary v. Tax Commissioner*, 155 N. E. (2d) 224, the testimony showed these facts: An Ohio state law provides that for the purpose of providing revenues to defray the expenses of the state highway construction and provide funds to pay for the elimination of railway grade crossings there is "hereby levied a highway use tax upon each commercial car with three or more axles . . ." The law specifies the taxes payable on motor trucks having three or more axles.

Further testimony showed that a man named McCreary is engaged in the trucking business in Ohio. His trucks transport bulk freight such as sand, lime, and soda ash. He refused to pay taxes to the state on his trucks having three axles or more, saying that the tax law is unconstitutional and void for the reason that it is discriminatory in imposing a tax upon some vehicles while exempting others from taxation. McCreary argued that the tax law is in contravention of the Fifth and Fourteenth Amendments of the Constitution of the United States.

The higher court refused to agree with McCreary's arguments and in holding the Ohio tax law valid and enforceable, said:

"It was evidently the opinion of the General Assembly that the owners of trucks with only two axles carried their fair share of the cost of the operation and maintenance of highways through the imposition

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of the other motor vehicle taxes."

This higher court went on to explain that the following were the average loaded weights of the trucks actually stopped and weighed: 3-axle or more tractor-semi-trailers, 30,120 lb.; 3-axle tractor-semi-trailers, 33,783 lb.; 4-axle tractor-semi-trailers, 48,770 lb.; and 5-axle or more tractor-semi-trailers, 61,266 lb.; whereas smaller trucks weighing 3,000 lb. transport around 18,000 lb. In this respect, the court said:

"It was apparently the conclusion of the legislature following their intensive studies that such vehicles should be excluded from the application of the tax. The exclusion of vehicles of 18,000 lb. or less from the tax is rational."

Local Ordinances Not Enforceable

Recently a higher court rendered an important decision to the effect that an industry being operated in an area over which exclusive jurisdiction is in the United States is not in the least subject to state, county, or city restrictive zoning ordinances.

For example, in *Thiele v. City of Chicago,* 145 N. E. (2d) 637, the testimony showed that jurisdiction over a certain area had been ceded to the United States by the State of Illinois years ago. Later a city in Illinois passed an ordinance restricting the uses of industrial property in this area.

Although the testimony showed that the operator of an industrial plant had signed a lease in which he had agreed to comply with all state, county, and municipal ordinances, nevertheless, the higher court held that he was not subject to any city, county, or state laws which restrict the uses of the industrial property. The higher court said:

"The dominant fact in this case is that exclusive jurisdiction over the area in question has been ceded by Illinois to the United States."

Make Your Trucks Safe

Last month a higher court rendered a decision holding a motor truck owner and its driver liable in $175,000 damages for death of a boy killed as a result of an accident involving a motor truck having defective brakes.

For illustration, in *Smith v.*

THOROUGH DUST COLLECTION!

Pangborn Dust Control eliminates float dust at Mexico Refractories

At Mexico Refractories Co., Div. of Kaiser Aluminum and Chemical Corp., Frostburg, Md., at least 7,000 tons of raw material a month pass through crushing, grinding and other dust-generating operations. To control and collect the resulting vast quantities of dust, two Pangborn Dust Collectors were installed.

These units provide thorough dust collection . . . every dust particle collected is returned to the process. As a result of Pangborn Dust Control, the air is free of float dust and good working conditions prevail. Although the company does not keep records on the amount of dust collected, it has found that salvage has been substantial. Mexico Refractories is highly satisfied with the effective, economical and trouble-free performance of Pangborn Dust Control.

If dust is a problem in your plant, talk to the Pangborn man in your area or write PANGBORN CORP., 5300 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Dust Control and Blast Cleaning Equipment—Rotoblast Steel Shot and Grit.*®

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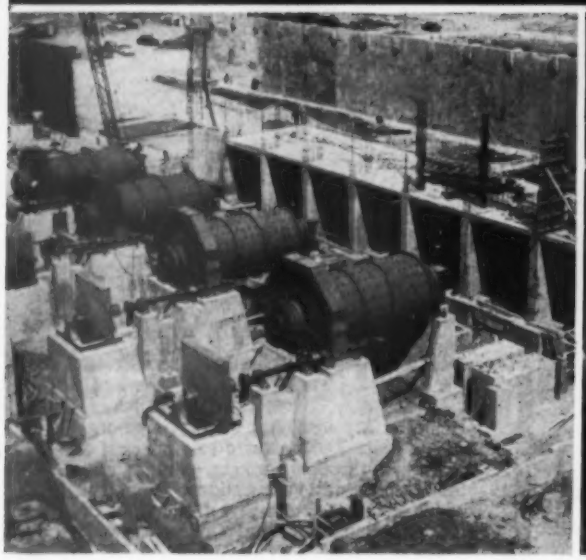

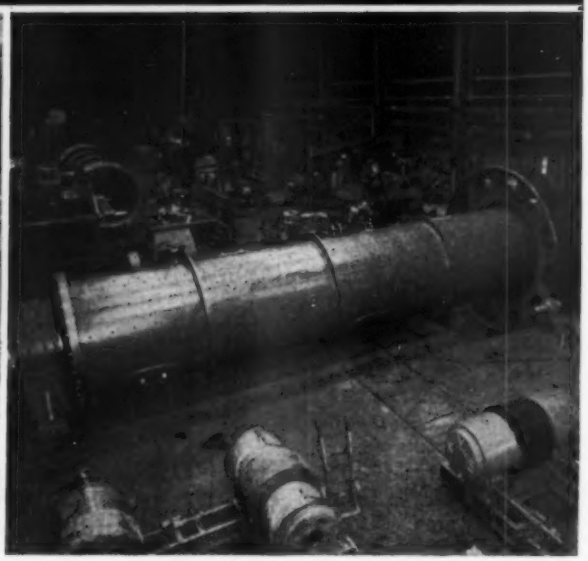

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KENNEDY MILLS are available in all types and sizes ranging from long, multi-compartment mills to shorter, large diameter mills for closed circuit grinding as mechanical discharge type or air-swept.

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KENNEDY MILLS used as a part of the patented KENNEDY Air-Swept Grinding System simultaneously grind and dry raw materials or coal, in closed circuit with non-mechanical air separators for kiln feed or kiln firing.

All KENNEDY MILLS are built in our own completely equipped plant. Shell flanges are machined simultaneously on special mammoth lathes for perfect alignment.

Ask a KENNEDY *engineer to show you the economies possible with a* KENNEDY *Mill.*

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Crotts and Chronister, 336 Pac. (2d) 1102, the testimony showed these facts: A firm named Smith Brothers entered into a written contract with the Oklahoma Turnpike Authority to construct a section of roadway. Smith Brothers located a gravel pit in that general vicinity and entered into contractual relations with one Crotts, who owned and operated a fleet of dump trucks, to haul the gravel to Smith Brothers' part of the turnpike construction at a stipulated price per ton. Crotts furnished the trucks and drivers, who included one Chronister, to haul the gravel. When the loaded trucks reached the construction site, they were weighed by Smith Brothers, and the drivers were told where to dump the gravel.

One day as one of Crotts' trucks, known to have defective brakes, was being driven by Chronister at a high rate of speed, there was an accident in which a boy was killed.

In subsequent litigation, the lower court held Crotts and Chronister jointly liable to the boy's parents for $175,000 damages. The higher court upheld this verdict and in this respect said:

"The judgment against Crotts was primarily based upon negligence in furnishing his employee, Chronister (with) a dump truck . . . having faulty brakes and other mechanical defects, and in operating the truck at an excessive rate of speed. The negligence as to Chronister was based upon the manner of (his) operating the truck at an excessive rate of speed, operating a truck with defective brakes, and overloading the truck with rock."

It is interesting that the higher court refused to hold Smith Brothers liable, in view of the testimony which showed that Crotts had exclusive authority over the employment of the drivers, their hours of work, the route to be traveled, and the rate of pay, as well as the upkeep and repair of the trucks.

For comparison, see *Matsumato v. Arizona Sand & Rock Company,* 295 P. (2d) 850, 851, 56 A.L.R. (2d) 1385. In that case the Arizona Sand and Rock Company had engaged the James A. Bond Trucking Company to haul "river run gravel" from a pit to the site of its road construction operations.

A passing truck caused a rock to be thrown 40 feet and through a doorway, causing injuries to one Kelly. The higher court held that the sand and rock company owed a duty to the public generally not knowingly to overload the trucks hauling its material so that rocks falling therefrom might create a dangerous condition upon the highway.

In subsequent litigation, the higher court held that Kelly could recover damages from the sand and rock company in view of testimony proving that the truck had been overloaded with dangerous materials.

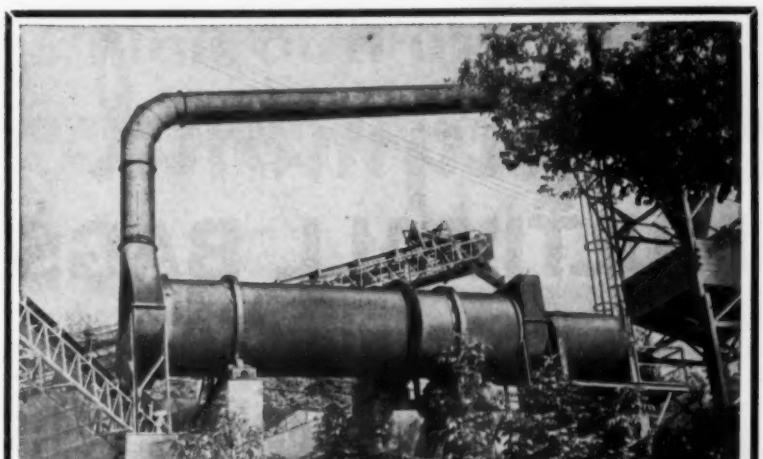
In other words, this higher court held that if a company overloads its trucks, it is responsible in damages to persons injured as a result of overloading.

New Income Tax Law

In a letter from an official of a large cement manufacturing corporation, this problem was posed: "Our plant is situated in a rather bleak and sparsely inhabited area. In order to attract workmen, we built numerous homes, some of which are modern, others are semi-modern. We rent these homes to our employees at low rentals; and considering our investment, we show a considerable deficit each year on these houses. My legal question is whether or not in our Federal Income Tax Returns we can lawfully charge these deficits against the gross income derived from incidental plant operations?

A higher court decision rendered only a few weeks ago clearly answers this question.

For illustration, in *Commissioner of Internal Revenue v. American Gilsonite Company,* 259 Fed. Rep. (2d) 654, the testimony showed these facts: The American Gilsonite Company is principally engaged in the mining of gilsonite, a hydrocarbon substance, from vertical veins averaging 20 ft. in width and up to 1,000 ft. in depth. Gilsonite is mined by a blasting operation at the face of the ore as it lies in the



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12 pages of diagrams, descriptions and on-the-job photographs to illustrate the scope of our work.

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vein. The blasting breaks the ore into chunks of various sizes. With it there is intermingled rock and other foreign matter.

Further testimony showed that the American Gilsonite Company owns townsite property consisting of approximately 50 houses, a school, a theater, and recreation and mess halls, which it rents. Such rental structures were built by the taxpayer in 1938. About 40 percent of the company's employees live at the townsite, which was operated and maintained by the company with a view of attracting a labor supply for its mining operation. The rate of rental for the houses was $2.50 per room per month, which was substantially less than a normal rental.

During the four tax years the company sustained losses of approximately $100,000 in connection with the operation of the townsite.

In subsequent litigation, the higher court held that the company's losses incident to its operation of the townsite to attract workers for its mining operations represented an indirect increase in salaries and wages paid by the company to employees engaged in its production activities and could be regarded as "direct" mining cost in determining the company's net income from its property for the purpose of applying the depletion allowance limitation.

Must Disprove Contractor

Considerable discussion has arisen from time to time over the legal question: If a contractor does work and furnishes materials without having a written contract with the building owner, can the contractor collect the amount he claims was the contract price, although the building owner testified that the contract price was much less?

The answer to this legal question is yes, if the property owner fails to introduce witnesses before the court to prove that the contractor promised to do the job for less than the amount for which he sued.

For example, in *Reeves v. Child*, 194 Pac. (2d) 919, the testimony showed the following facts: A contractor sued a property owner to recover a bill amounting to $1,372.41 for labor and materials. The property owner defended the suit on the contention that the contractor was not entitled to a favorable verdict for this amount because he had orally promised to do the job for considerably less money than $1,372.41.

However, since the property owner failed to introduce witnesses before the court proving that the contractor had agreed to do the job for less than $1,372.41, the higher court held the contractor entitled to full recovery, saying:

"The defendants (property owner) were afforded ample opportunity to present any defense they might have to the claim of plaintiff (contractor). They failed to offer any evidence to dispute the claim of the plaintiff (contractor)."

Chilean Cement Firm Backed By U. S., Canadian Interests

The International Finance Corporation, Washington, D. C., has announced a commitment to invest $1,000,000 (in U. S. dollar notes maturing by 1971) in Cementos Bio-Bio, S.A., a new Chilean company. Bio-Bio will build a new cement plant at Huachiapato, near Concepcion, about 350 miles south of Santiago, to produce approximately 132,000 tons annually of portland, iron-portland, and slag cement. The latter two types are to be produced in Chile for the first time.

Other firms supporting the venture by investing in common stock are Koppers International, C.A., (a subsidiary of Koppers Co., Inc., Pittsburgh), Transoceanic Development Corporation, Ltd., of Toronto, and the Chilean sponsoring group. Total cost of the project is about $5 million. Over $1 million is being raised by popular subscription.

Bio-Bio has a management and technical assistance agreement with Koppers International for supervision of the technical and production aspects of the company during the first ten years of operations. The new plant will adjoin Compania de Acero del Pacifico, S.A. (CAP), a large Chilean steel mill, which will provide the slag and limestone used.

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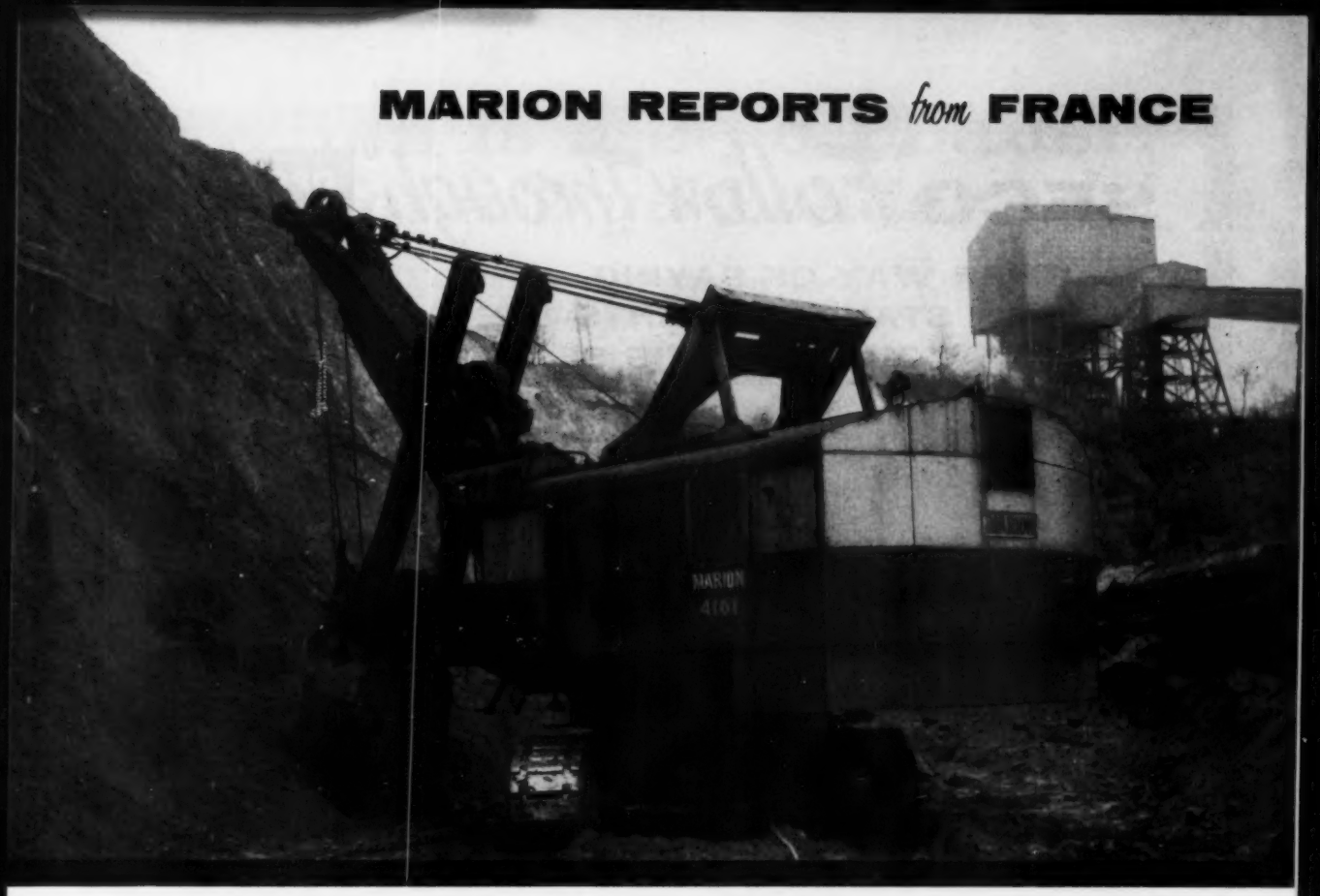

4161s Provide HIGH OUTPUT-
LOW COST LOADING In Quarry Operation

Three Marion 4161 electric shovels have been providing a high rate of output and steady, low cost loading performance for Houilleres du Bassin de Lorraine, Merlebach, France. Since 1865, this firm has been engaged in coal mining and quarrying operations.

Like many other 4161 owners throughout the world that are engaged in mining and quarrying, officials of this firm especially like the ruggedness, simplicity of design and ease of maintenance of their machines.

Presently, the Marions are loading Vosgian sandstone in rail cars at an average rate of 620 tons an hour for each machine. These three machines work two or three 8-hour shifts daily, maintaining a daily output of 21,000 cu. yds., and an annual output of 6,000,000 cu. yds.

If you haven't seen Marion's bulletin on this dependable 6-yard Ward-Leonard electric machine, write for your copy today.

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Send me information about MARION ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted).
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ANOTHER WAY OF SAYING WE SHIP STANDARD PARTS THE SAME DAY THE ORDER IS RECEIVED

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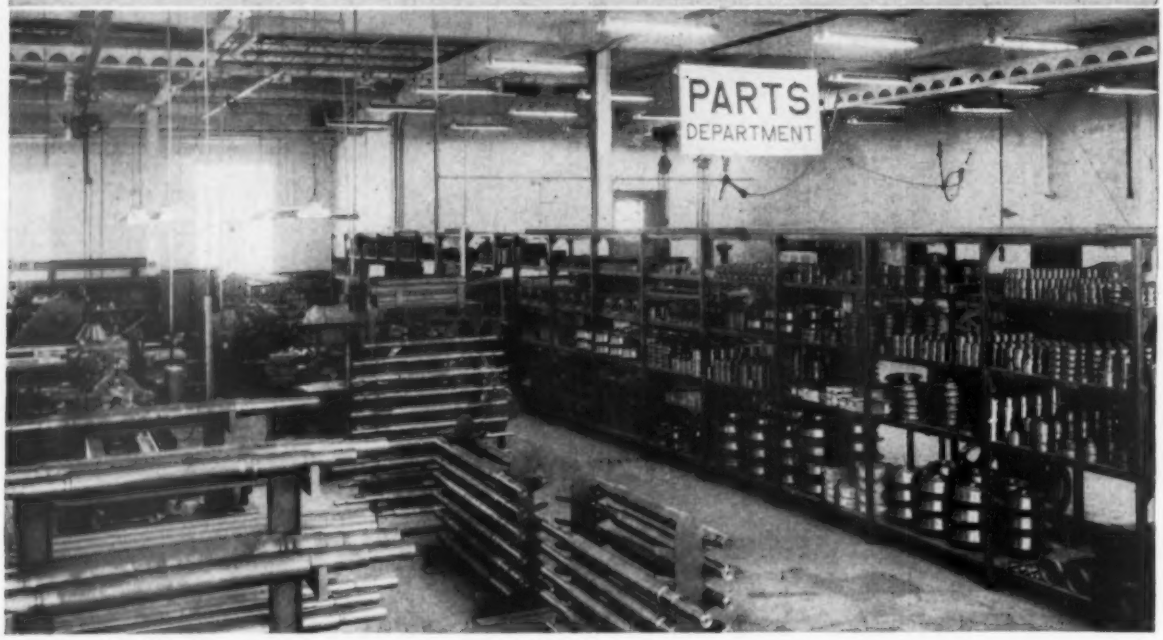

Here's still another example of our continuing recognition of responsibility to SECO screen owners. Another example of our lasting interest in your SECO screen, long after it has left the factory.

We maintain at all times a complete stock of all SECO standard parts, fabricated and machined to strictest specifications.

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SECO NO. 1 NEARS QUARTER CENTURY OF SERVICE

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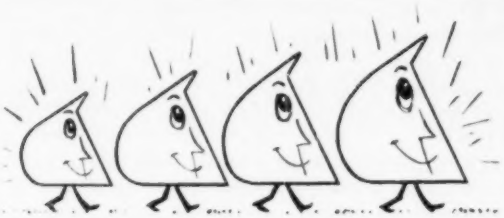
When is a 2-yd Loader *Not a 2-yd Loader?*

. . . Simply when it operates over or under carrying capacity. The right combination to peak production and longer loader life is the right size bucket on the right size loader.

That's why Allis-Chalmers offers a wide selection of buckets for each of the TL-14, TL-16 and TL-20 TRACTOLOADERS. You choose the size that's just right for the weight of materials you handle and your job operating conditions.

Some buckets are too big . . . others too small

Using a bucket that's too big for the material you handle can cause excessive repairs and downtime . . . using one that's too small costs you money because you're not getting all you can out of your loader. That's why you should select your bucket/loader by carry capacity. For example, with the TL-20 which has a 9,000-lb carry capacity, you could use a 3-yd bucket in materials that weigh 3,000 lb. You could use a 5-yd bucket with materials that weigh 1,800 lb.



Fit the bucket to the job

Whether you're working good, level terrain, swampy ground or hilly country, there's a right loader and bucket combination for your material needs . . . your operating conditions. Choose from 17 bucket/loader combinations.

BOTH *loader and bucket* have to be tough

. . . or the most efficient selecting in the world won't help! That's why Allis-Chalmers offers such outstanding features as extra-high spill guards . . . double-bottom bucket and replaceable wear plates — why TRACTOLOADER axles are pin-connected directly to the frame with 2-inch-diameter steel pins instead of the usual U-bolt method. There is no rolling or shifting under load — no bolts to work loose, no mounting plates to warp out of shape.

Your Allis-Chalmers construction machinery dealer can assure you longer loader life . . . more consistent production year after year than anyone else. His products are by-products of experience — backed by first-line quality parts and good service.

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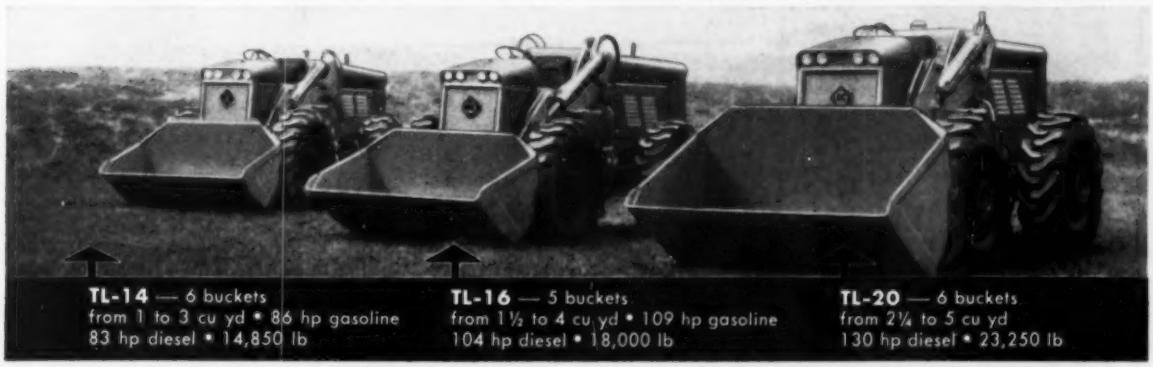

TL-14 — 6 buckets
from 1 to 3 cu yd • 86 hp gasoline
83 hp diesel • 14,850 lb

TL-16 — 5 buckets
from 1½ to 4 cu yd • 109 hp gasoline
104 hp diesel • 18,000 lb

TL-20 — 6 buckets
from 2¼ to 5 cu yd
130 hp diesel • 23,250 lb

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Get the most out of your present equipment. When you need replacements, remember we started in 1913 to build our reputation in the Manganese Steel field for dependability plus economy.

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Carlisle, Pennsylvania • Established 1881

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SIZE TESTS
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STONE,
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SAND,
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Makes 2 to 7 separations simultaneously in five minutes or less. Size range: 4-in. to 200-mesh. Sand attachment optional for handling 8-in. sieves.

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COMPANY
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GILSON SCREEN CO.
MALINTA, OHIO

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Manufacturers' News

DR. JOHN W. HOOPES is now director of the chemical engineering department in Atlas Powder Company's chemicals division, succeeding MARSHALL T. SANDERS. Mr. Sanders was eligible for retirement in October, but agreed to remain at Atlas in the new position of technical assistant to the executive vice-president, EDWARD J. GOETT.

Dr. Hoopes joined Atlas in 1955. He was manager of the chemical engineering department's process engineering section from 1956 until 1958, when he was appointed assistant director of the department. Mr. Sanders joined Atlas in 1917 as a chemist and served in explosives and chemical plants. After various positions of responsibility he later became director of the chemical engineering department when the department was formed in 1945.

DONALD H. MITCHELL has joined the J. I. Case Company, Racine, Wis., and has been appointed manager of the newly formed Industrial Products Division. He formerly was eastern sales manager for LeTourneau-Westinghouse Company.

S. W. BROCK, formerly sales representative of the Case Clausen Works in Racine, will be assistant manager of the new division. G. W. WATTS will be in charge of technical information.

J. D. Anderson

J. H. Apel

JAMES D. ANDERSON has been named to the new position of vice-president, sales, of The Jaeger Machine Company, Columbus, Ohio. In other executive promotions the company has named JOHN H. APEL as vice-president, engineering, to succeed ARNOLD S. MILLIKEN, retired; BRUCE C. BEHMER as treasurer; and PERRY D. SCHWARTZ as secretary, succeeding JOHN M. ULRICH, retiring secretary-treasurer.

Mr. Anderson, with Jaegar 25 years, has been general sales manager since 1956. Mr. Apel, chief engineer since 1956, has been with the company 17 years. Mr. Behmer, with 20 years' service, has been assistant secretary since 1950. Mr. Schwartz, with Jaeger since 1945, has been assistant treasurer since 1954.

Mr. Ulrich and Mr. Milliken have retired after 48 and 46 years, respectively, with Jaeger Machine Company.

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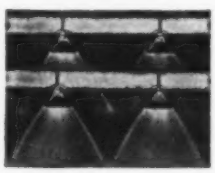
Are Simple, Efficient, Economical



When you have a material washing or spraying operation, inexpensive CONCENCO Spray Nozzles are easy to install. They deliver an excellent spray pattern, either in an unbroken sheet stream of good body, or staggered as you wish. To install, you simply drill one oversize hole per nozzle, clamp on, align and get results. Machined orifices assure effective, uniform spray. Send for full information.

THE DEISTER CONCENTRATOR CO., INC.
911 Glasgow Ave., Fort Wayne, Ind.

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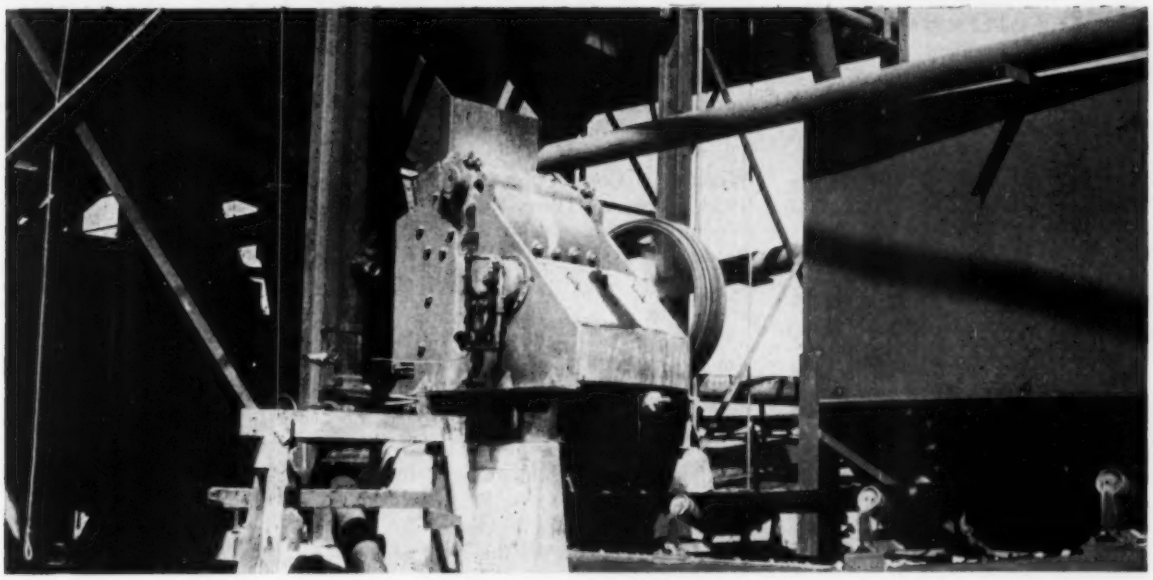
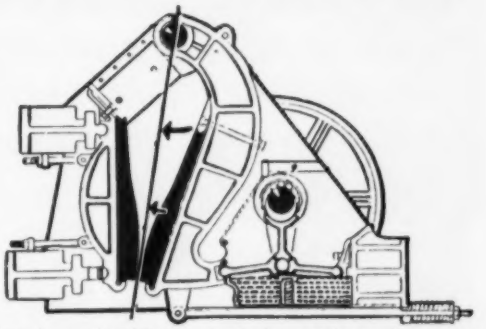
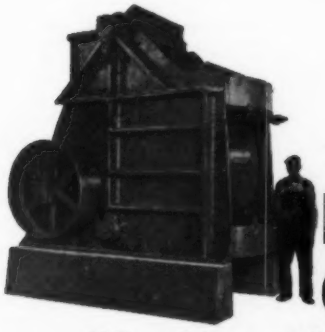
4th year on original jaw plates with KUE-KEN® "crushing without rubbing" saves downtime, replacement costs



Jaw plates last at least 5 times longer with Kue-Ken "crushing without rubbing". Installed in 1956 by Rhodes & Jamieson, Centerville, California, to crush hardest gravel, Kue-Ken crusher has eliminated over 3 years of periodic jaw plate replacement and expensive downtime typical of conventional crushers. Utilizing power to crush rock instead of wearing out jaw plates, Kue-Ken power consumption is far less. A sealed, dust-tight lubrication system with all mechanism operating in filtered oil permits higher speeds for greater capacity and a more uniform product. In fact, a smaller Kue-Ken will generally provide the capacity you need at a substantial saving in capital investment. Crusher wear is negligible and shut-downs common to conventional machines are practically eliminated. Automatic flywheel release prevents breakage from tramp iron. For lowest cost-per-ton crushing, select Kue-Ken crusher in the size to meet your needs.



See how the hinge pin is located on the center line of the crushing zone. The jaw moves in an almost straight line. Rock is instantly gripped and crushed without rubbing.



WRITE FOR CATALOG

KUE-KEN® CRUSHERS

"Crushing without Rubbing"

STRAUB MFG. CO., INC. 8381 Baldwin St., Oakland 21, Calif.

Jaw Crushers · Gyratory Crushers · Overhead Eccentric Crushers
Revolving Screens · Classifiers · Feeders · Rib Cone Ball Mills
Concentrating Tables · Vibrating Screens

DEALERS:

SEATTLE, WASH.	Washington Machinery Co.
BUTTE, MONTANA	Hall-Perry Machinery Co.
VANCOUVER, B. C.	Universal Equipment Co.
SALT LAKE CITY, UTAH	Lund Machinery Co.
SAN ANTONIO, TEX.	Closner Equipment Co.
LOS ANGELES, CALIF.	Garlinghouse, Fremon Co.
SAN FRANCISCO, CALIF.	Aggregates Engineers, Inc.
PORTLAND, OREGON	Air-Mac, Inc. of Oregon
BISMARCK, NORTH DAKOTA	Midwest Equipment Co.
PHOENIX, ARIZ.	Road Machinery Co.

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

JACK H. CONNORS has been named vice-president and general manager of KW-Dart Truck Company, Kansas City, Mo., a subsidiary of Pacific Car and Foundry Company, Renton, Wash. Mr. Connors comes to his new position from another subsidiary of Pacific Car, Texas Kenworth Corporation, where he was vice-president and general manager of its Texas division.

Replacing Mr. Connors at Texas Kenworth is ROBERT J. HUTCHINSON, formerly administrative assistant to ROBERT D. O'BRIEN, vice-president of sales for the parent company.

The Smith Engineering Works, Milwaukee, Wis., has appointed the American State Equipment Company, Milwaukee, as exclusive distributor for the state of Wisconsin. This organization is headed by ROBERT J. KRAUT, an experienced distributor of aggregate plant equipment. American State has nine salesmen, a complete line of allied aggregate plant machinery, and a new shop for service facilities.

The Thompson-Ramo-Wooldridge Products Company has established a sales engineering office in Chicago, Ill. The new office is headed by central regional sales manager RAY J. STANISH who will be responsible for all of the company's sales activities in the central part of the United States.

Mr. Stanish was chief engineer of the replacement division of Thompson Products, Inc., Cleveland, prior to joining TRW Products in 1958. Thompson Products and The Ramo-Wooldridge Corporation merged in 1958, forming Thompson Ramo Wooldridge, Inc., of which TRW Products is a division.

JOHN P. HORAN has been promoted to market research manager of Yale Materials Handling Division, The Yale & Towne Manufacturing Company, Philadelphia, Pa. Prior to his new post, he was assistant market research manager. Mr. Horan succeeds FRANK P. MINNELLI who was recently named director of planning on the staff of President GILBERT W. CHAPMAN.

D. A. Bessmer

W. E. Umstattd

At a special meeting of the board of directors of The Timken Roller Bearing Company, D. A. BESSMER was elected president of the company to succeed WILLIAM E. UMSTATTD. Mr. Umstattd, although retired as president in accordance with company policy, continues to serve as a director and as chairman of the executive committee. Mr. Bessmer had been serving as executive vice-president and has assumed his new duties as president. H. E. MARKLEY has advanced from vice-president to executive vice-president to succeed Mr. Bessmer.

Mr. Umstattd, president of the Timken Company since 1934, joined the company in 1919. Starting in the bearing factory as an inspector, he was elected president 14 years later.

Mr. Bessmer joined the industrial division of the Timken Company in 1933. After serving in positions of increasing responsibility, he was elected a vice-president in 1953. In 1957 he was elected executive vice-president.

Mr. Markley joined Timken in 1938 as an accountant trainee. In 1953 he was elected secretary of the company, and in 1958 he became vice-president.

BRUCE M. SMITH has been appointed chief industrial engineer for SKF Industries, Inc., Philadelphia, Pa. He fills a post left vacant by STUART J. NORTHROP, who is now mechanical superintendent.

In his new post, Mr. Smith will be responsible for the establishment and administration of industrial engineering policies and procedures. Prior to his association with SKF Industries, he was director of industrial engineering for The Standard Products Company, Cleveland, Ohio.

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal —no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300% —special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893

THE WHITMORE MANUFACTURING CO.

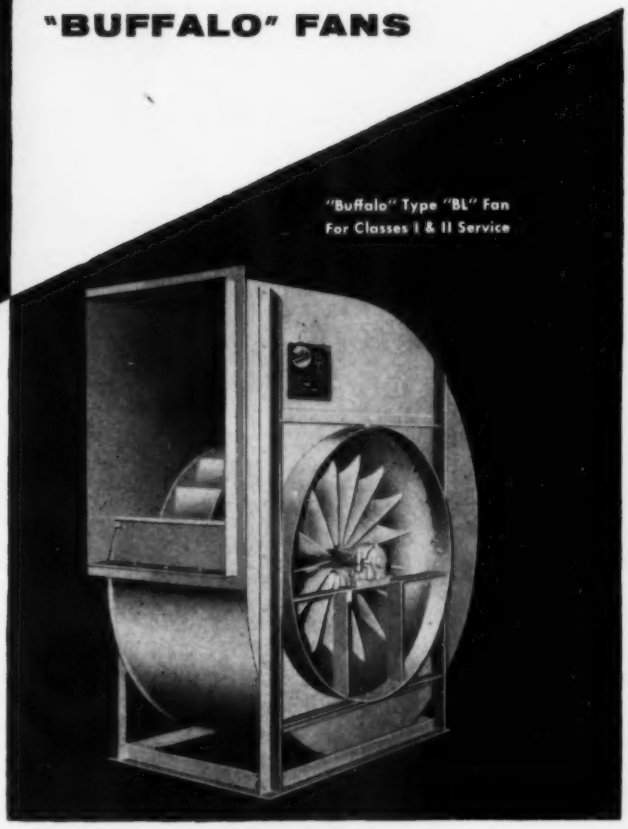
LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

Enter 204 on card, page 167

MINIMUM MAINTENANCE, LONG LIFE ASSURED BY THESE HEAVY-DUTY "BUFFALO" FANS

"Buffalo" Type "BLH" Fan
For Classes III & IV Service



"Buffalo" Type "BL" Fan
For Classes I & II Service

The high performance characteristics of these two outstanding "Buffalo" Fans has resulted in their widespread use in the field of industrial air handling. In addition to offering peak-efficiency operation in their respective classes, both the "BL" and the "BLH" bring you a bonus economy factor of *maintenance reduced to an absolute minimum* throughout a long, productive life. This minimum maintenance factor is directly due to unusually rugged "Buffalo" construction features such as:

HOUSINGS — The heavy gauge sides and scroll are of all-welded construction. Heavy structural steel bracing provides housing stiffness and rigid bearing support. Flanged inlets and outlets give added support.

SHAFTS — Hot-rolled or forged shafts are ground to close tolerances for perfect wheel and bearing fit.

WHEELS — Sturdy backward-curved blades are welded to the die-formed shroud and welded or riveted to the solid backplate. Heavy hubs assure permanent shaft alignment. For higher tip speeds, reinforcing rings provide necessary wheel rigidity.

BEARINGS — Self-aligning anti-friction bearings are designed for continuous operation at maximum tip speed. Horizontally split, ring-oiled, self-aligning, babbitted sleeve bearings are also available.

For full details, contact your "Buffalo" representative, or write for Bulletins F-104 and F-201.

Minimum maintenance is assured by the famous "Q" Factor — the built-in QUALITY that provides trouble-free satisfaction and long life in every "Buffalo" product.

"Buffalo"

BUFFALO FORGE COMPANY

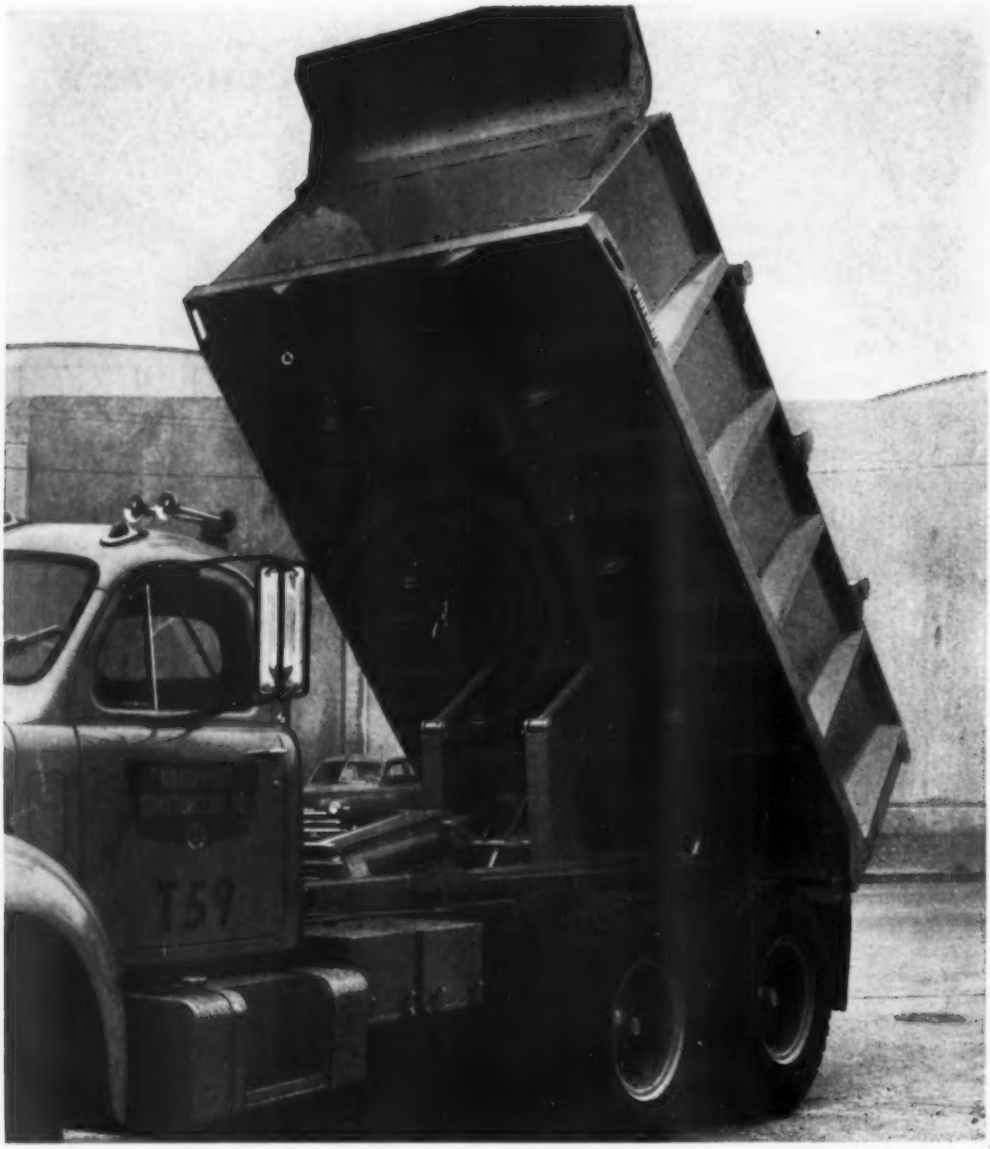
526 Broadway • Buffalo, N. Y.

BUFFALO PUMPS DIVISION, BUFFALO, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING FORCED DRAFT COOLING HEATING PRESSURE BLOWING

USS COR-TEN and "T-1" Steels cut truck



Weight reduction of 1,020 pounds, resistance to heavy impact and low maintenance are the main reasons why these dump truck bodies were built with USS COR-TEN Steel and "T-1" Steel.

Enter 206 on card, page 167

weight 1,020 pounds—boost payload

These 9-yard trucks used by the Northwest Construction Co., Seattle, double as cement batch trucks and earth movers. For this reason, they built the sides and ends from USS COR-TEN High-Strength Low-Alloy Steel for strength plus atmospheric corrosion resistance. They put 3/16" plates of "T-1" Steel in the bottoms to take the battering from rock and shale. This combination produced a truck body that weighs 1,020 pounds less, hauls *more* payload, lasts *longer* and needs *less* maintenance.

Mr. Homer Baer, Shop Maintenance Superintendent at Northwest Construction, says, "I'm not a steel man, but when metal takes the beating that this stuff does, it's a superior product." He was referring to the USS COR-TEN Steel in the sides and tail gate and the "T-1" Steel in the floor.

"With the old trucks, denting and cracking of dump beds caused by dropping rocks used to be a major problem," says Mr. Baer. "Since installing 'T-1' Constructional Alloy Steel, we haven't had a single incident of cracking or denting. That stuff has the highest impact resistance of any steel I've ever seen."

Northwest Construction has 15 of these rugged trucks in service. The bodies are fabricated by Fruehauf Trailer Co., Seattle and the metal forming is done by Capitol Industries.

Good fabricating properties. All USS High-Strength Steels in the 50,000 psi yield point range can be readily formed and welded. These include USS COR-TEN, MAN-TEN and TRI-TEN brands. USS "T-1" Constructional Alloy Steel is also weldable and workable and has a minimum yield strength of 100,000 psi. It provides extra high strength and great resistance to impact abrasion. Used together, these steels offer a perfect combination for construction equipment. For more information, write to any district office of United States Steel or Room 2801, 525 William Penn Place, Pittsburgh 30, Penna.

USS, COR-TEN, MAN-TEN, TRI-TEN and "T-1" are registered trademarks

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

TWENTY-TON LOAD aboard trailer fails to bother multiwall sack made with CLUPAK kraft. Patented, built-in stretch absorbs shock as wheels pass completely over. Sack contains 100 pounds of abrasive sand-blasting grit, found difficult to package prior to use of CLUPAK paper multiwalls.

SAVINGS PILE UP when CLUPAK paper multiwalls are used. Flexibility lets them fill better, may cut storage or shipping space up to 25%. Sacks can be palletized higher, easier, because they stack better.

CLUPAK TRADEMARK is your assurance the bag paper meets the most rigid of shipping requirements, even when CLUPAK paper toughness makes possible lower total basis weight. Look for the trademark.

NEW PAPER WITH REVOLUTIONARY *"TOUGHNESS"* CUTS MULTIWALL BREAKAGE...AND COSTS, TOO!

BETTER PERFORMANCE, LOWER COST! CLUPAK Extensible Paper opens a new era in paper . . . makes it virtually a new material, with unlimited applications. For CLUPAK paper has built-in *stretch* or extensibility which lets it absorb the shocks and strains that cause ordinary paper to rip, tear and puncture. The result is a new dimension in paper—*toughness*. In multiwall sacks, CLUPAK paper toughness delivers far better performance . . . often at lower cost, by permitting fewer multiwall plies and a net saving in total basis weight. And CLUPAK paper *flexibility* can mean additional advantages—faster filling, easier handling and stacking.

KEY FACTS FOR BUYERS: CLUPAK kraft is the same as ordinary kraft except that it is stronger, tougher and more flexible. It can be made in many basis weights, and with varying degrees of stretch. Printability, surface friction, porosity and other properties can be controlled as with ordinary paper. Clupak, Inc., does not make paper. It carries on continuous research and development work, and results are made available to all licensees, listed below. **Clupak, Inc., permits use of its trademark only on paper which meets this company's rigid toughness requirements.** Clupak, Inc., 530 Fifth Avenue, New York 36, N. Y.

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Hudson Pulp and Paper Corp.
International Paper Co.
St. Lawrence Corp., Ltd. (Canada)
St. Regis Paper Co.
Union Bag-Camp Paper Corp.
West Virginia Pulp and Paper Co.

Calumet Division, Calumet & Hecla, Inc., has named PAUL D. LAHAIE as sales engineer, metal fabrications, for its midwest territory. Calumet Division offices and foundry are located in Calumet, Mich.

P. D. LaHaie

W. L. Litle

Bucyrus-Erie Company, South Milwaukee, Wis., has regretfully accepted the resignation of W. L. LITLE as chairman of the board due to continuing ill health. He has been associated with the company for 32 years. Mr. Litle managed the company's Erie, Pa., plant for 20 years, during which time he was named a vice-president in 1943, and a director in 1947. He became president in 1952, and was elected board chairman in 1957.

Succeeding Mr. Litle as chief executive officer is ROBERT G. ALLEN, president of the company since 1958. Mr. Allen joined Bucyrus-Erie in 1957 as a vice-president. A. S. PUELICHER, a member of the board since 1945, succeeds Mr. Litle as board chairman. He is also chairman of the board of Marshall & Ilsley Bank in Milwaukee.

Cummins Engine Company, Inc., Columbus, Ind., has appointed five men to new positions as divisional sales managers. The divisional sales managers are responsible for the activities of all Cummins regional managers, fleet sales personnel, and construction sales personnel.

The new divisional sales managers and their headquarters are: R. F. DAVIS, midwest division, Chicago; G. W. PAINE, Canadian division, Toronto; G. A. DAUM, western division, San Francisco; F. J. LOELOFF, eastern division, New York; and R. R. MACDONALD, southern division, Atlanta.

Bemis Bro. Bag Company has announced plans for the construction of a new one-story manufacturing plant in the San Francisco Bay area. The new plant, expected to be completed in late spring of 1960, will be built in Newark, Calif., and will replace the company's San Francisco plant.

THOMAS C. MCKNIGHT has been appointed product manager-electric trucks at Baker Industrial Trucks, Division of Otis Elevator Company, Cleveland, Ohio. He replaces EDWARD P. PATRICK, who has been appointed sales application specialist. Mr. McKnight joined the company in 1957.

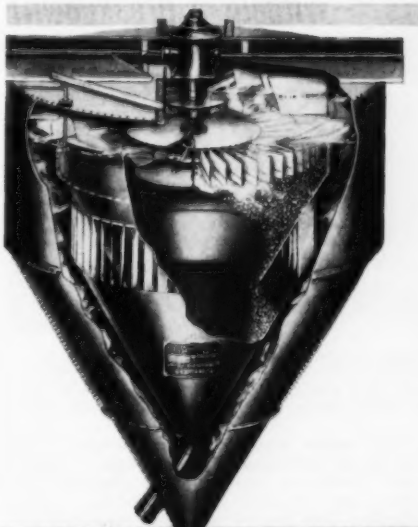
Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio, has appointed the Boehck Construction Equipment Corporation, Milwaukee, Wis., as distributor for Lima Austin-Western products. The new distributorship will cover eight counties in the southeastern section of Wisconsin.

D. EDWARD MANNING has been appointed director of sales and marketing for Napco Industries, Inc., Minneapolis, Minn. He was formerly regional sales manager for Toyota Motors Distributing Company, Inc. WILLARD C. NELSON has been appointed to the position of field sales manager. He also was with Toyota Motors.

HARRY RATKOWSKI has been appointed manager of sales, castings, and high alloy products in the midwest and lower Atlantic seaboard for the central sales district of Electric Steel Foundry Company, Danville, Ill. GENE OTTARSKI will replace Mr. Ratkowski as office manager in central sales.

Two officers have been advanced by the board of directors of the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. Elected senior vice-presidents of the company were BOYD S. OBERLINK and J. L. SINGLETON. Both previously were vice-presidents.

USING SCREEN SEPARATIONS? NOTHING CLASSIFIES AS PERFECTLY AS AIR



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CENTRIFUGAL AIR SEPARATORS

Classify practically all dry fine materials

You get:
- CLOSER SEPARATIONS
- IMPROVED PRODUCTION
- NO UNDESIRABLE OVERSIZE.

RANGE 60 to 400 mesh.
Timken bearings.
Choice of Standard or Heavy-Duty Models.

this helpful booklet sent on request

Robert M. Gay Division
UNIVERSAL ROAD MACHINERY CO.
117 Liberty St., New York 6, N. Y.
Factory and Laboratory: Kingston, N. Y.
In Canada: Watson-Jack Hopkins Ltd., Montreal

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HERBERT J. MAYER, executive vice-president of Western Machinery Company, has been elected a partner of the Edward R. Bacon Company, San Francisco, Calif. Effective October 1, 1959, he assumed the position of general manager of the latter company. He will continue as a director of Western Machinery and as executive vice-president in charge of the company's machinery distribution businesses presently being handled by the Industrial Sales and Smith Booth Usher Company Divisions of the Western Machinery Company.

CLYDE V. JOHNSON, Lakewood, Colo., has been appointed manager of the central sales division of Denver Equipment Company, Denver, Colo. The central division includes the 17 central states and extends from Canada to Mexico. Mr. Johnson, whose headquarters will be in Denver, has been with the company for the last 13 years. Prior to his latest promotion he was assistant sales manager.

The Crane Carrier Corporation, Tulsa, Okla., has recently acquired the Maxi line of self-propelled crane carriers and trucks from Insley Manufacturing Corporation, Indianapolis, Ind., and The Maxi Corporation, its wholly-owned subsidiary.

Insley Manufacturing reports that all future sales and service of Maxi products will be conducted by the Crane Carrier Corporation from Crane's Tulsa plant; and that Insley will continue to offer Maxi self-propelled carrier mountings for their line of cranes, excavators, and log loaders.

ROBERT V. PENTLAND has been appointed zone manager, eastern territory, for Daybrook Hydraulic Division, Young Spring & Wire Corporation, Bowling Green, Ohio. Zone headquarters will be in Norwalk, Conn. Mr. Pentland has been in the truck equipment business in New England for the last 14 years. Formerly he was sales manager for Truck Equipment Company, Norwalk, Conn.

JOHN J. FINNERTY has been appointed Chicago sales representative for The W. W. Sly Manufacturing Company, Cleveland, Ohio. He has been with the company's sales department since 1957.

J. J. Finnerty

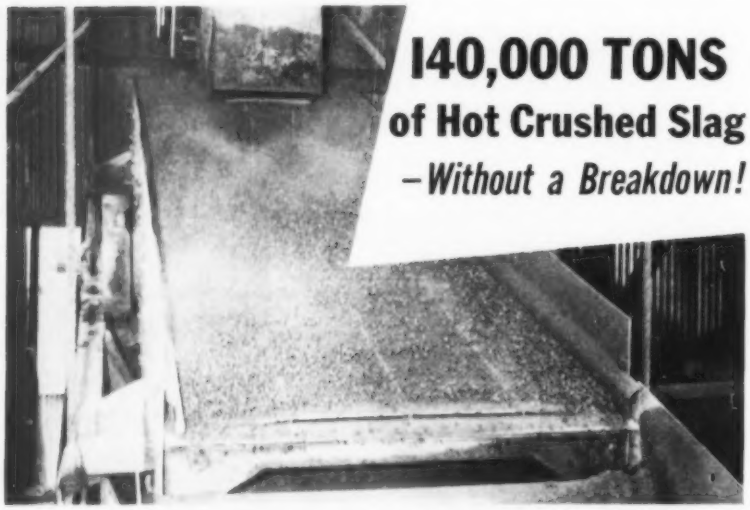
C. A. Vogel

CHARLES A. VOGEL has been appointed sales representative for the Mission Manufacturing Company's northeast district, with headquarters in Philadelphia, Pa. He primarily will be responsible for sales of the *Hammerdril*. Before joining Mission, Mr. Vogel was district manager and representative for the M-R-S Manufacturing Company, Flora, Miss.

J. A. BAILEY JR. has been named manager of hydraulic hose sales for the Goodyear Tire & Rubber Company, and assigned to the company's new hose plant at North Chicago, Ill. He has been a member of Goodyear's Akron hose sales staff since 1955.

D. E. HARRINGTON has been appointed sales engineer for the newly-formed hydraulic hose sales department. He was transferred to North Chicago from his position as field representative for the company's industrial products division at Lakeland, Fla.

EDWARD C. BANNAN has been appointed works manager of Bucyrus-Erie Company plant operations at South Milwaukee, Wis. He had been acting works manager for several months, following a brief tenure as plant engineering manager. Prior to joining Bucyrus-Erie last December, Mr. Bannan spent five years with Curtiss-Wright Corporation as manager of plant engineering at the firm's plant in Woodbridge, N. J.



140,000 TONS
of Hot Crushed Slag
—Without a Breakdown!

WITH CLEVELAND "CLELOY" SCREEN SECTIONS

● With results like this a leading Midwestern slag plant saved money over a five-day week, 11-month period using a screen engineered to their requirements by Cleveland Wire Cloth and Manufacturing Co.

See our ad in PIT & QUARRY Yearbook

Cleloy screen sections are manufactured and woven to withstand high abrasion, corrosion and continuous process steam. Properly applied, they produce high tonnage, reduce blinding and require minimum maintenance. For amazing results in your screen operations—write or call your specifications today.

THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 East 78th Street • Cleveland 5, Ohio • Telephone: Diamond 1-1832

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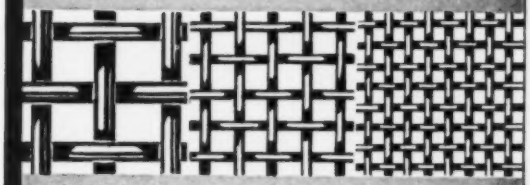
STRONG AS ARMOR
NAT-ALOY
Woven Wire Screens



Reliable Nat-Aloy woven wire cloth is specified throughout industry for maximum screening accuracy and economy. Available in flat surface, lock crimp, double crimp, rectangular and long slot openings. All sizes, meshes and gauges—prompt shipment.

WE OFFER NOW... SUPER NAT-ALOY
OIL TEMPERED WOVEN WIRE CLOTH
★ GREATER RESISTANCE TO ABRASION
★ MORE TONNAGE AT LOWER COST
★ FEWER COSTLY CHANGE OVERS

Write for information. Also stainless steel wire screens.

NATIONAL WIRE CLOTH COMPANY
252 W. Fairfield Ave., St. Paul 1, Minnesota

Enter 211-A on card, page 167

SINCE 1885 — GRUENDLER QUALITY, THE BEST THAT MONEY WILL BUY

Solving a difficult problem:
crushing "Caliche Rock"

View of Gruendler 6X Series Single Rotor Crushing Plant in operation by J. LEE MILLIGAN of AMARILLO, TEXAS

The aggregate plant crushes over 250 tons hourly of Caliche Rock into a more uniform product, to assure greater stability for roads now under construction. The New Modern Gruendler Aggregate-making Equipment, backed by many years of experience, are prime reasons for their popularity throughout the Nation.

Manufacturers of PORTABLE and STATIONARY Rock and Gravel Crushing, Screening and Material Handling Equipment.

Write for our Bulletin: ROCK and GRAVEL OPERATION

GRUENDLER CRUSHER & PULVERIZER CO.
Dept., P.Q.-1159 2915 N. Market St., St. Louis, 6, Mo.

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BRAND NEW!

1959 Edition of PIT and QUARRY's
LIGHTWEIGHT AGGREGATE PLANT MAP

This combination map and listing is a *must* for anyone interested in the lightweight aggregate field. All known plants are listed alphabetically by state and located graphically on the map. The plant's address and the brand name of the aggregate it produces is given. The map is 33½ inches wide and 32 inches high, and is printed on sturdy paper stock suitable for framing.

The following are the quantity prices for this map.

QUANTITIES	PRICE
1 — 10 maps	50¢ each
11 — 25 "	45¢ "
over 25 "	40¢ "

We will be happy to fill your order for any number of maps you may desire.

PIT & QUARRY PUBLICATIONS, INC.
431 S. DEARBORN ST. • CHICAGO 5, ILL.

CHARLES W. BEAUCHAMP has been appointed marketing manager and will head up all sales activities of Link-Belt Company's Ewart plant in Indianapolis, Ind. KENDRICK M. HICKMAN has been appointed sales manager. The appointments follow the retirement of FOREST H. SPENCER after 40 years of service.

Mr. Spencer, who has been sales manager of the Ewart plant since 1948, joined Link-Belt in 1918. Mr. Beauchamp started at the Ewart plant while attending the University of Cincinnati. He has been assistant sales manager for the Ewart plant since 1948.

Mr. Hickman began with Link-Belt at the Ewart plant in 1927. He was named assistant sales manager for the plant in 1952.

CLARENCE THOM, director of the Denver Equipment Company's ore testing division for nearly 25 years, is now the consulting metallurgist for Denver Equipment and its customers. His office will be at the company headquarters in Denver, Colo.

Ramset Fastening System has moved its headquarters from Cleveland, Ohio, to New Haven, Conn. Ramset is part of the Winchester-Western Division of Olin Mathieson Chemical Corporation, which has headquarters in New Haven.

Concurrent with its change in headquarters, Ramset has established dealer service facilities and warehouses in Los Angeles, Calif., and East Alton, Ill. The West Coast office is under the direction of TED R. MCGARY, customer service manager. The midwest office is directed by JOHN W. BEALL, customer service manager. PETER CARAGHER will act as customer service manager in New Haven.

Morris Machine Works, Baldwinsville, N. Y., has revealed plans to construct a $\$1/2$ million modern industrial plant on its present building site, in Baldwinsville. The new one and two-story building is scheduled for completion in spring 1960, and will provide nearly 60,000 sq. ft. of space for production and administrative offices.

RICHARD W. FLAGG, who has served as assistant director of the Denver ore testing division for the last two years, has been promoted to chief metallurgist for the Denver Equipment Company, Denver, Colo. He fills the vacancy created by the promotion of H. J. GISLER to manager of the eastern sales division.

R. W. Flagg

D. W. Turnbull

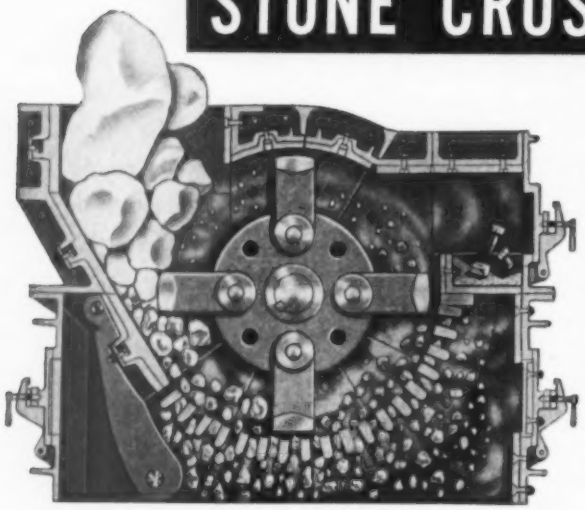
DALE W. TURNBULL has been promoted to supervisor of wheel tractors and motor graders, product section of product division, Caterpillar Tractor Company. He was formerly Caterpillar district representative in Oklahoma and Kansas. In his new position, he will have responsibilty for working with owners in assessing production of current machines and development of new equipment and attachments.

RUSSELL A. HEDDEN has been appointed works manager of manufacturing, Industries Group, at Allis-Chalmers West Allis, Wis., works. He succeeds E. W. BONNESS who has been named consultant to the director of manufacturing, Industries Group.

Mr. Hedden formerly was works manager of the company's York, Pa., Works. He joined the S. Morgan Smith Company, now the York Works of Allis-Chalmers, in 1951 as comptroller.

JOHN G. RAGSDALE has been named assistant to the vice-president-sales of The General Tire & Rubber Company, Akron, Ohio. In his new executive assignment, his fifth since joining General Tire in 1948, Mr. Ragsdale will work to promote both replacement and original equipment tire sales as well as retaining supervision over the advertising department.

American MODEL ACS
STONE CRUSHERS



- Capacities up to 250 tons per hour
- Ruggedly built for extra heavy duty service
- Manganese steel liners, breaker plates, hammers and grate bars
- Wide range of reduction ... low-cost operation

Write today for literature! "Better Stone Crushing"

American PULVERIZER COMPANY
ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS
1059 MACKLIND AVE. ST. LOUIS 10, MO.

Enter 212 on card, page 167

Announcing **WORLD'S TOUGHEST OFF-ROAD TIRE!**

All-New Nylon U. S. Royal Super Con-Trak-Tor with ...69% to 95% Longer Tire Life!

S.R.T.*

Steel Reinforced Tread*

New S.R.T.—as shown here in the X-Ray photo—is a **tough** reinforcement of tread, shoulder and buttress areas. It consists of several thick layers of tread rubber containing thousands of short lengths of brass-coated steel filaments. This forms a virtually **impenetrable** mat between the tread and nylon cord body and extends down through the shoulder and buttress areas providing **positive** protection against combination cut-and-impact failures!

Add to exclusive Steel Reinforced Tread... 50% deeper tread at center... far deeper tread at shoulder... 25% more ground contact... Double-Strength Nylon and you have the world's **toughest** off-road tire! No wonder the great new U. S. Royal Super Con-Trak-Tor-S.R.T. outperformed **every** tire put against it—by the widest of margins—up to 95%! Can you afford less on **your** jobs?

U.S. ROYAL SAFETY 1st TRUCK TIRES

US RUBBER **United States Rubber**

The complete business of Flaherty Manufacturing, Inc., Pocatello, Idaho, has been acquired by the Koehring Company. Flaherty manufactures *Broom-Master* power brooms with optional moldboard attachments, *Spread-Master* self-propelled aggregate spreaders, *Win-Ro* windrow measuring spreaders, *Imperial* portable crushers, self-propelled *Roll-Master* rubber tired rollers, and *Shelterbelt* conveyors.

The Flaherty firm will operate as a branch of Koehring's Buffalo-Springfield Division. GENE FLAHERTY, president of Flaherty Mfg., will remain as general manager of the new branch, and will have responsibility for the manufacture and sales of Flaherty products.

Robert G. Holmes has been appointed midwestern representative for Acme Chain Corporation, with headquarters in Chicago. Mr. Holmes has more than 20 years' experience in the power transmission field. He has recently been midwest regional sales manager for the Morse Chain Company.

In January, Iowa Manufacturing Company, Cedar Rapids, Iowa, will hold its annual *Cedarapids* Maintenance and Operation Conference. Originated in 1946 as a service to customers and dealers, the Conference offers practical information on maintenance procedures, preventive maintenance, and correct operating methods.

The 1960 *Cedarapids* Conference will be divided into three sessions: January 11 through 15, on aggregate producing equipment for producers and contractors; January 18 through 22, on bituminous mixing and paving equipment, for producers and contractors; and January 25 through 29, service school for *Cedarapids* dealers and their service personnel.

The discussions are headed by *Cedarapids* engineers and servicemen, who design and service the equipment. Equipment models, slides, and movies will be visual aids. The sessions are offered at no charge to participating personnel other than normal transportation and living expenses.

The Frank G. Hough Co., Libertyville, Ill., has appointed DAVID D. HUNSAKER as manager, sales development. Mr. Hunsaker was formerly a district manager and has been associated with the Hough Co. for almost 14 years.

D. D. Hunsaker

B. E. Gallagher

Bailey Meter Company, Cleveland, Ohio, has appointed B. E. GALLAGHER as resident engineer in Indianapolis, Ind., subdivision of the company's Chicago district. Mr. Gallagher joined the company in 1946 as an engineering trainee, and was assigned to the Chicago district after completion of his training.

JAMES E. QUINN has been named manager of the western division of Denver Equipment Company, Denver, Colo., which includes the 11 western states. Headquarters for the division are in Denver, with a sub-office in Tuscon, Ariz., headed by C. A. RICHARDSON.

Mr. Quinn has been a sales engineer for Denver Equipment for the last 11 years. In addition to his sales responsibilities in the western part of the country, he will head a world-wide uranium processing equipment sales division.

The appointment of CONRAD L. DANIELS as works manager of the Rockford, Ill., plant of the J. I. Case Company has been announced. LAWRENCE H. HODGES, former works manager, has been promoted to a top position in central engineering at the company's headquarters in Racine, Wis.

Mr. Daniels has held positions of increasing responsibility with the company and was plant manager prior to his recent appointment.

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BROWNHOIST
job-engineered BUCKETS
for less money · direct from factory-to-you
write for your copy of this 24-page illustrated catalog today

Capacities from ½ cu. yd. to 400 cu. ft.

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212

INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY · MICHIGAN

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Enter 215 on card, page 167 →

clean stack at Dragon Cement!

DRACCO GLASS-BAG FILTER HALTS AIR POLLUTION BY COLLECTING KILN DUST AT 600° F.

The unretouched photograph shows the dramatic result produced by a Dracco Glass-Bag Filter at Dragon Cement Co., division of American-Marietta Co., Northampton, Pa.

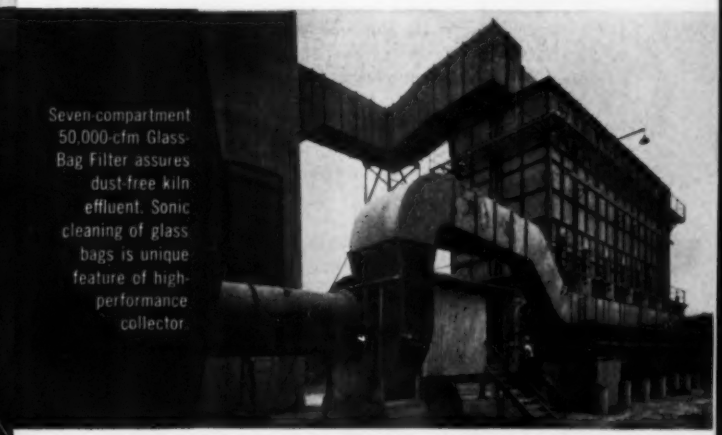
The kiln is running at full capacity—but no visible dust is escaping from the stack connected to the Glass-Bag Filter. The filter is collecting the extremely fine dust with virtually 100% efficiency. Duplicate equipment has been ordered to eliminate visible dust from the other stack.

Convinced that this is the best answer to air pollution from kiln stacks, Dragon has ordered three more Glass-Bag Filters. Soon all stacks will be clean at Dragon!

Exclusive dust removal techniques assure extra-long bag life. At Dragon, Dracco's patented SONOCLEAN unit safely cleans the bags with sonics. Sound waves gently dislodge dust without wear or fracture of the cloth.

Modular, compartmented design gives flexibility to meet any capacity requirement and simplifies servicing. Worker comfort during servicing is assured by interior insulation.

Dracco Glass-Bag Filters, the first successful glass cloth collectors, are now collecting hot, corrosive dust and fumes in many industries—cement, chemical, metallurgical. Gases to 600° F. can be introduced into the filter where specially treated glass bags retain all visible dust.

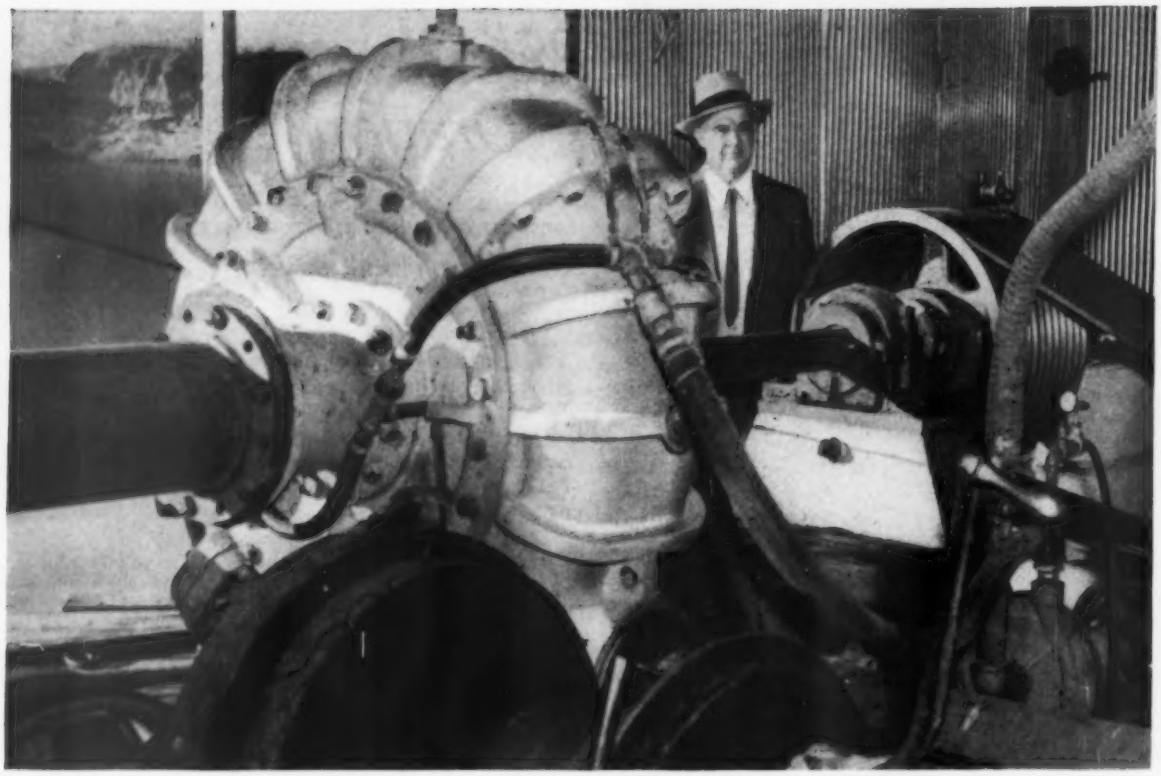


Seven-compartment 50,000-cfm Glass-Bag Filter assures dust-free kiln effluent. Sonic cleaning of glass bags is unique feature of high-performance collector.

For further information on Glass-Bag Filters, today's most advanced equipment for air pollution or hot dust problems, contact: Dracco Division of Fuller Company, Harvard Avenue and E. 116th Street, Cleveland 5, Ohio.

DRACCO *airstream* conveyors
dust control equipment

FULLER COMPANY



This dredge, operated by a prominent sand and gravel producer in Kansas, is equipped with a highly successful Thomas Ni-Hard pump installation.

Dredgers report Ni-Hard alloy pumps outwear others 4 to 6 times

From state after state come reports of the extraordinary service life of Thomas Ni-Hard pumps, made by Thomas Foundries, Inc., Birmingham, Alabama.

A West Virginia sand and gravel producer, for example, reports, "Since 1953, we have used only two Ni-Hard shell liners . . ."

A New Jersey company formerly replaced parts every 2 to 3 weeks . . . now says, "Today, we get approximately a year's service . . . a lifesaver."

From Nebraska: – ". . . after almost two years of pumping has required no repairs, major or minor."

From Arkansas: – ". . . by far the most efficient and economical pump we have ever used, our 40-year records prove."

From these reports, it's easy to see that *longer pump life means lower operating costs!*

And a large part of the credit for the outstanding durability of Thomas Pumps goes to Ni-Hard* nickel-chromium cast iron.

This alloy is the most abrasion resistant of all commonly used cast materials, out-lasting many 4 to 6 times . . . regularly outwearing manganese steel in pump service.

What's more, Ni-Hard alloy has demonstrated remarkable impact resistance . . . being widely used for drop balls, crusher linings, and for many other severe applications. In impellers, casings, linings, and other parts for pumps, Ni-Hard alloy has virtually eliminated cracks or impact erosion caused by gravel and rocks.

If severe wear is running up your operating costs – it will pay you to find out what Ni-Hard alloy can do. Inco's booklet, "Engineering Properties and Applications of Ni-Hard" gives you essential details, and Inco's "Ni-Hard Buyers' Guide" lists authorized producers throughout the country. Write us for your free copy.

*Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N.Y.

INCO NICKEL

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

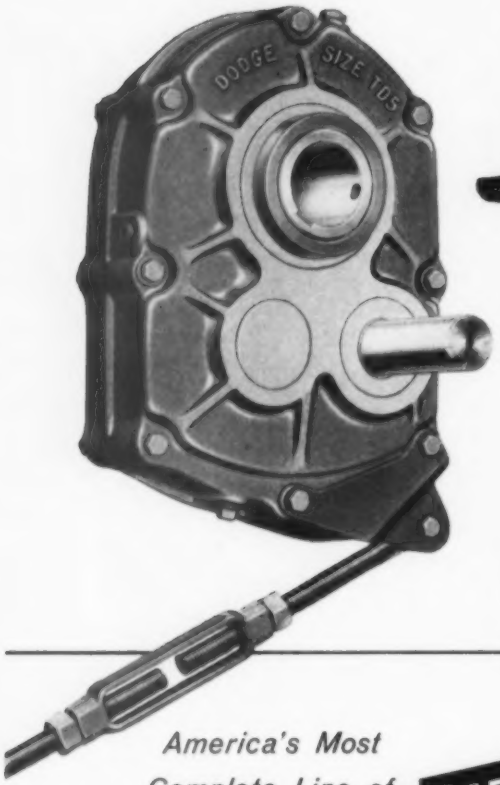
"Spotty, as a digger, you just ain't got it!"

Without realizing it, Billy has hit upon a basic truth in the excavating business. To come out on top, you've got to use the best equipment for the job.

With many factors beyond a contractor's control, choosing the right equipment becomes especially important. For this is one thing a man *can* control.

That's why so many contractors choose Bucyrus-Erie. They have learned . . . as their fathers did before them . . . that B-E machines are built for more than ordinary digging. They are built to handle the toughest jobs — and still perform better.

BUCYRUS ERIE



Torque-Arm

THE DODGE DEVELOPMENT THAT CHANGED THE NATION'S HABITS OF SPEED REDUCTION

America's Most Complete Line of Shaft Mounted Speed Reducers

55 MODELS

- Capacities up to 170 hp
- Output speeds from 10 to 378 rpm!
- Single Reduction
- Double Reduction
- 5 to 1 Ratio
- 15 to 1 Ratio
- 25 to 1 Ratio
- Any speed ratio up to 150 to 1 obtainable by selection of pre-determined combination of reducer and V-belt drive.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

In fewer than ten years, the range of Torque-Arm Shaft Mounted Speed Reducers has increased from 6 to 55 models, to meet the ever increasing demand for this improved method of speed reduction.

By eliminating foundation, sliding base and flexible coupling this modern speed reducer has saved untold installation time and untold dollars of cost.

The rugged semisteel housing developed by Dodge has never been improved upon. It is corrosion resistant—and it has the strength to hold bearing seats in line for the life of the unit.

Dodge design provides wide spacing for the bearings. Loads are carried easily, contributing to Torque-Arm's long life and very high efficiency. The gears are finest quality—helical, heat treated steel.

Torque-Arm mounts vertically or horizontally in any position around the driven shaft. It locks to the shaft on *both* sides of the housing. The holes in the output hub provide simple removal with puller. Overload release and built-in backstop are optional.

Dodge Torque-Arm is America's most widely used shaft mounted speed reducer. It is stocked by your local Dodge Distributor. Ask him. Or write us for bulletin.

DODGE MANUFACTURING CORPORATION, 4000 Union, Mishawaka, Ind.

DODGE
of Mishawaka, Ind.

FOR THE JET AGE... LONGER RUNWAYS AND VINSOL PLAYS ITS PART

Vinsol resin has long been recognized as the most economical air-entraining material.

Today, with a record billion dollars to be spent this year alone on new and enlarged military, municipal, and private airports . . . with highway construction proceeding at an accelerated pace . . . with new construction of office buildings changing the skyline of our major cities—the efficiency and economy of Vinsol as an air-entraining agent for concrete is more important than ever.

Since the concept of air-entraining was first introduced by the cement industry in the 1930's, Vinsol has been widely specified for use in this field. Write to Hercules for technical data explaining the many advantages of Vinsol.

VINSOL®

Naval Stores Department
HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington 99, Delaware

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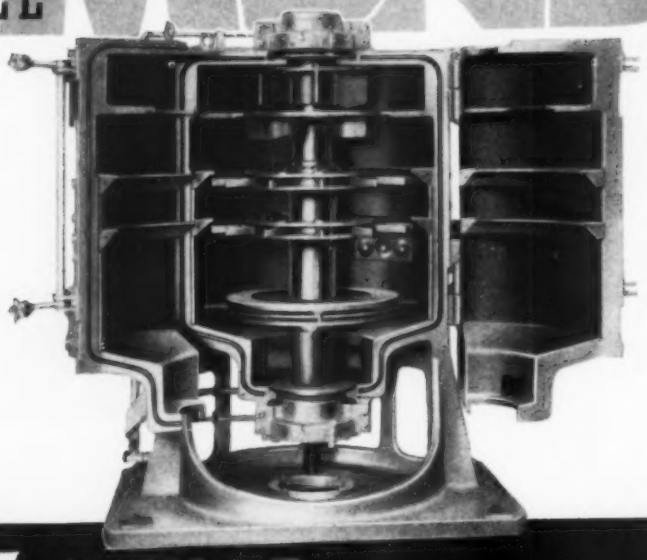
RAYMOND VERTICAL MILL

ACCESSIBLE
AUTOMATIC
DUST-FREE
EASY CONTROL
SIMPLE DESIGN



. . . FIRST in Hi-Fineness

FOR producers making extremely fine materials in the sub-sieve particle sizes, the Raymond Vertical Mill offers special advantages in operating economy and product quality.

This modern design emphasizes such features as:

1. **Wide application to non-metallic minerals, chemicals, pigments, synthetic resins, phosphates and many special materials.**
2. **Quick and complete accessibility for adjustments, and clean-outs for product changes.**
3. **Easy control of classification, and ability to meet exacting particle size distribution.**
4. **Automatic, dust-free operation with no overheating of product.**
5. **Compact layout and flexible installation.**

The Raymond Vertical Mill is serving industry in the production of solid rocket propellants, and it does an excellent job in pulverizing ammonium nitrate and ammonium perchlorate oxidizers.

If you have a special high-fineness grinding problem, write for information.

This Raymond Bulletin #78 gives detailed information on superfine pulverizing operations. Write for your copy.

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Raymond Division
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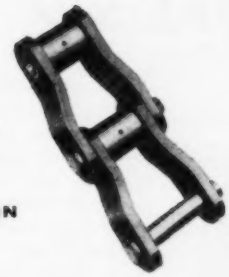
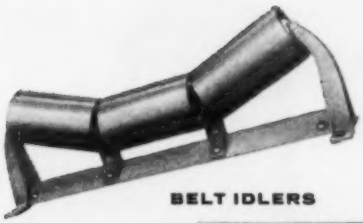
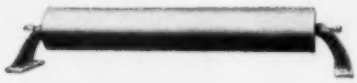
CHICAGO 22, ILLINOIS
SALES OFFICES IN PRINCIPAL CITIES
Combustion Engineering-Superheater Ltd., Montreal, Canada

CHAIN

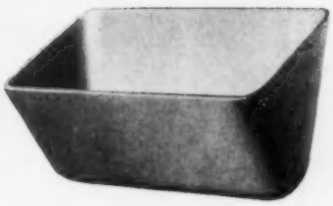




BELT IDLERS



Jeffrey equipment stocked for shipment



BUCKETS

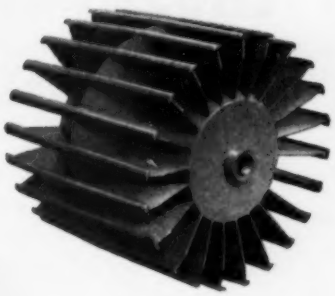
SPROCKETS

From factory or distributor stocks you can get fast service on a host of Jeffrey products...for elevating and conveying machinery and many industrial applications.

When replacing parts or modernizing machinery, it's wise to use genuine Jeffrey equipment. Highest manufacturing standards, based on years of experience, assure dependable performance. For service, call your Jeffrey distributor or write The Jeffrey Manufacturing Company, 917 North Fourth Street, Columbus 16, Ohio.

PULLEYS

PILLOW BLOCKS

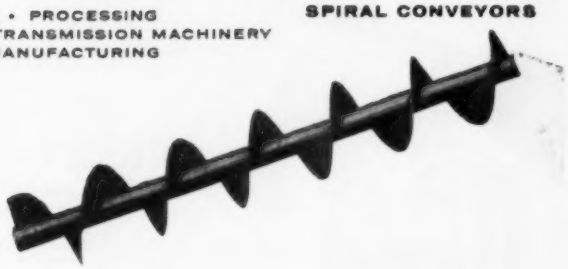


JEFFREY

CONVEYING • PROCESSING
MINING EQUIPMENT. .TRANSMISSION MACHINERY
CONTRACT MANUFACTURING

DISCHARGE VALVES

SPIRAL CONVEYORS



"TIRED" in a wink!

You'll get "tired" in a wink when you use Southern Tire's time-tested 'round-the-clock scheduling for your retreading needs. Fast, efficient pickup and delivery service at your job site . . . *after work hours* . . . helps you cut costly downtime . . . lick tough schedules. And retreads as much as ¼" deeper than ordinary retreads mean longer service for your tires under rugged conditions! Expert workmanship, ultra-modern equipment plus finest quality rubber manufactured to Southern Tire's own specifications guarantee *new tire* mileage at approximately half of new tire cost!

OVER 75,000 TIRES WORTH OF EXPERIENCE!

All sizes from 1100 x 24 to 33.5 x 33.

Always deal with an independent—developers of every major improvement in the industry.

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Greater Strength . . . Maximum Safety . . .

CROSBY-LAUGHLIN Load-Rated* TURNBUCKLES

guaranteed rated capacities

- **Stronger hooks . . . stronger eyes . . . stronger jaws**
- **Big hex ends make takeup easier, faster, safer**
- **Most complete range of sizes**
- **100% Drop forged . . . Weldless**

Write for free specifications catalog listing the most complete line of drop forged fittings for wire rope and chain.

Stocked by leading distributors everywhere.

CROSBY-LAUGHLIN *Division*

AMERICAN HOIST & DERRICK COMPANY

FT. WAYNE, INDIANA

Manufacturers of Crosby Clips and "Load-Rated" Blocks . . . Crosby-Laughlin "Load-Rated" Fittings . . . Lebus Load Binders and Snatchblocks.

*Trademark

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BUELL PUTS "DOUBLE EDDY" TO WORK TO INCREASE DUST COLLECTION EFFICIENCY!

Ordinary cyclones provide limited efficiency in recovering cement dust from flue gases, because of "double eddy" currents inside all cyclones. But Buell Cyclones make the Double Eddy work to increase efficiency.—The Double Eddy circulates vertically inside cyclones, acting against the normal separating force of the spinning stream of dust and gas. Buell Cyclones have a narrow "Shave-off" port (2) at the top of the casing. This port catches and removes dust trapped in the Double Eddy. It makes the cyclone more efficient instead of less.—This is one of the reasons eight out of ten Buell installations pay for themselves in five years or less.—Only Buell Cyclones combine this extra efficiency with large diameter. They will not clog or plug even with dust loadings up to one pound per cubic foot of gas. No field fitting is needed: They are completely assembled and match-marked before shipment. They can be completely lined, inside and out, against heat, corrosion and abrasion.—For a list of installations near you, a copy of our Catalog 103, or other information, call our nearest representative, listed in the telephone classified directories of most major cities under "Dust Collection Systems". Or write Dept. 18-K Buell Engineering Company, Inc., 123 William Street, New York 38, N. Y. (Subsidiary: Ambuco Limited, London, England.)

1. Inlet for dust-laden flue gas.
2. Dust Shave-off port.
3. By-pass dust channel.
4. By-pass re-entry opening.
5. Dust outlet.
6. Clean flue gas outlet.

EXPERTS AT DELIVERING EXTRA EFFICIENCY IN DUST RECOVERY SYSTEMS • Cyclones • "SF" Electric Precipitators • Combination Systems • Dry Classification Systems

buell®

FILTER BAGS? WE KNOW MOST (NOT ALL)* OF THE ANSWERS...

As one of the world's leading manufacturers of industrial textiles, Albany Felt Company is in the best possible position to analyze your filter bag needs — and meet them effectively and economically. Since we can furnish any fiber, in any fabric, our recommendations are completely impartial.

It pays, in every sense of the word, to call in the company that is:

1. **unrivaled in research and manufacturing facilities**
2. **the developer of many new filtration ideas**
3. **a start-to-finish producer of almost every type of filter bag for every purpose, in every industrial field**
4. **a pioneer in needled fabrics for reverse-air units**

Albany Felt Company's facilities offer prompt, efficient service anywhere on the North American continent. Your inquiries are invited.

ALBANY FELT COMPANY
INDUSTRIAL FABRICS DIVISION
MAIN OFFICE AND PLANT: ALBANY 1, N. Y.

** our laboratories are working toward knowing ALL there is to know!*

ATTACH THIS COUPON TO YOUR LETTERHEAD — MAIL IT TODAY

ALBANY FELT COMPANY
INDUSTRIAL FABRICS DIVISION
ALBANY 1, N. Y.

☐ Please send us your latest Filter Bag bulletin.

☐ Have your representative call to supply us with a free, scientific analysis of our filter fabric requirements.

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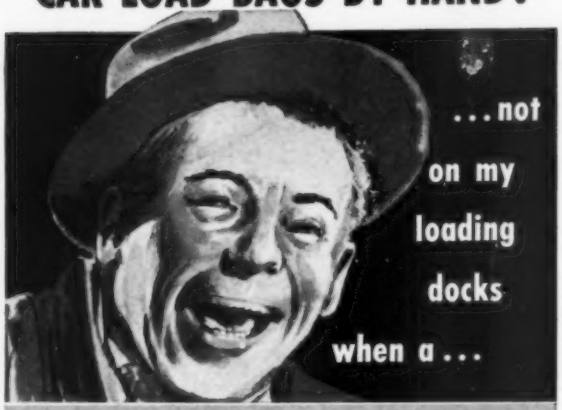
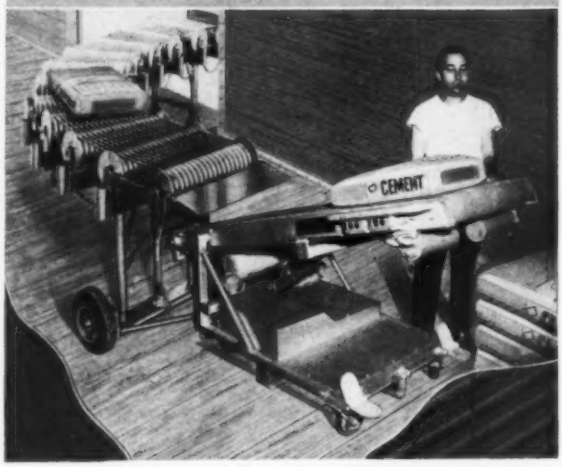
CAR LOAD BAGS BY HAND?



POWER-CURVE automatic installation will show me a healthy saving in *just one season!*



POWER-CURVE makes a quick payout on cement, loading without physical lifting, without interruption and *with just one man* . . . replaces a steady parade of hand trucks and labor. POWER-CURVE will flatten filled bags, route them to storage or to the dock, fill box cars or trucks from end-to-end and to full height neatly stacked against transit damage. POWER-CURVE can transfer, elevate, sort and select. It can unload, convey mixed loads, palletize and economize! It is used by virtually every major cement company in one or more plants. It is self-powered, mobile, fully flexible and variable in height . . . Write for information tailored to your requirements, no obligation.

TEN TYPICAL POWER-CURVE USERS

Alpha-Portland Cement Co.	Penn-Dixie Cement Corp.
Lone Star Cement Corp.	Standard Lime and Cement Co.
North American Cement Corp.	Universal Atlas Cement Co.
General Portland Cement Co.	Whitehall Cement Mfg. Co.
Louisville Cement Co.	Dewey Portland Cement Co.

POWER-CURVE
CONVEYOR COMPANY
2185 SOUTH JASON ST., DENVER 23, COLORADO

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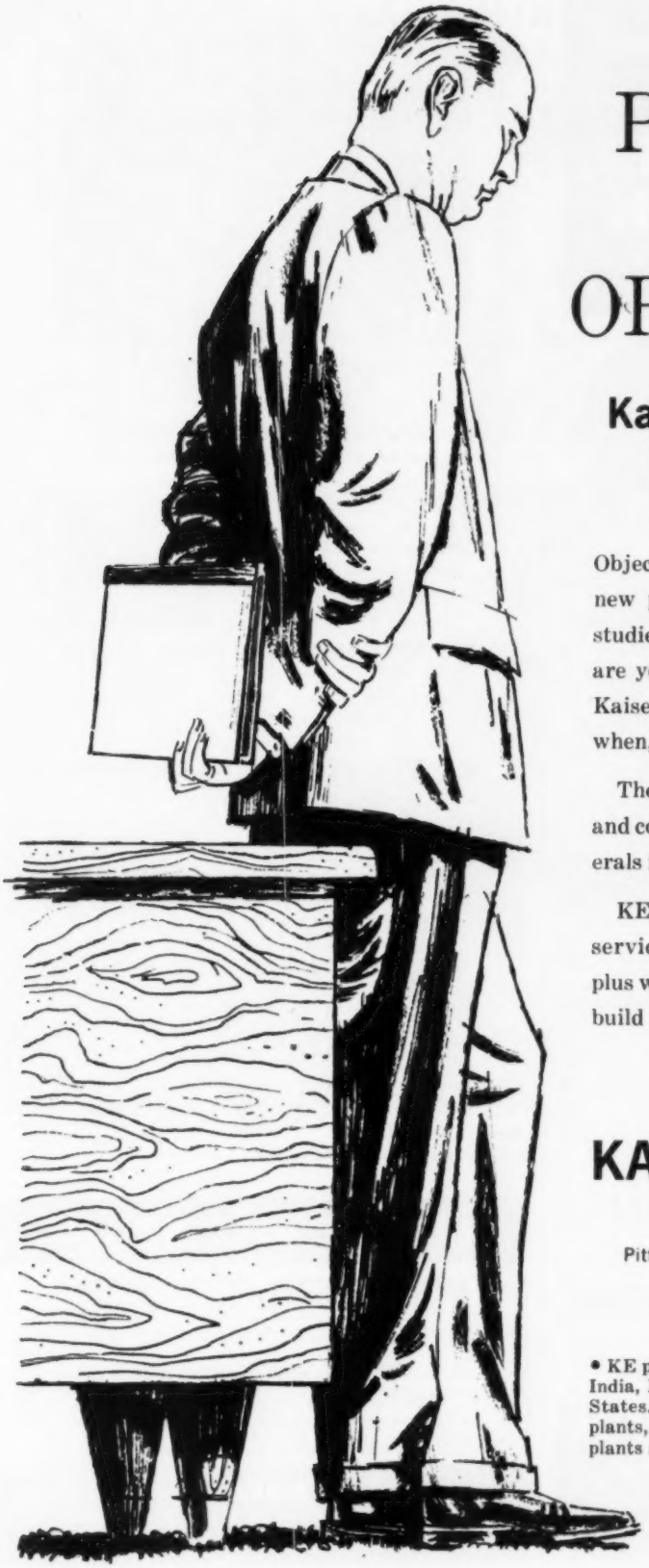

PROCEED, DEFER OR MODIFY?

Kaiser Engineers can help you decide

Objective analysis is vital to sound decision on new plant or expansion projects. Feasibility studies, economic analyses and site evaluations are yours by an outside, impartial firm when Kaiser Engineers is selected to help you decide when, how and where to proceed.

These services are in addition to the design and construction of major facilities for the Minerals industry.

KE offers complete, one-company, integrated service from concept through construction—plus world-wide experience and the ingenuity to build quickly, within budget.

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• KE projects include work in Australia, Brazil, Ghana, India, New Zealand, as well as Canada and the United States. Assignments include iron ore concentrating plants, cement plants, bauxite and alumina processing plants and diatomaceous earth facilities.

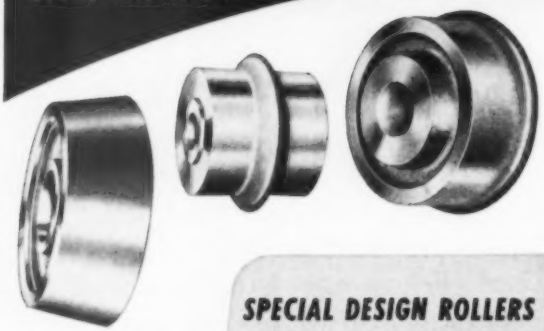
5458-M

A Wheel or Roller for Every Need!

ENGINEERED FOR YOU BY

FARRELL -CHEEK

F 85, HARD EDGE ALLOY AND CARBON ELECTRIC FURNACE STEEL CASTINGS



SPECIAL DESIGN ROLLERS
SINGLE FLANGE WHEELS
DOUBLE FLANGE WHEELS
CRANE WHEELS
CONVEYOR ROLLERS
INDUSTRIAL CAR WHEELS

Extreme Resistance to

✓ SHOCK
✓ WEAR
✓ ABRASION

DOWNTIME REDUCED TO A MINIMUM!

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BUCKETS • SPROCKETS • CHAIN • WHEELS • GEARS • SHEAVES • CABLE FITTINGS • BAR BENDERS, CUTTERS • R. R. CASTINGS • FIRE TOOLS, ETC.

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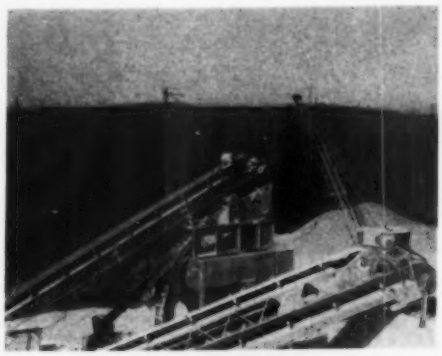
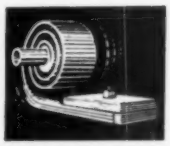


RELIABILITY

In remote locations, you'll really appreciate the day-in, day-out top performance of Overstrom Vibrating Screens.

"How to Estimate Screen Area Requirements" — part of the useful data in our new 8-page Catalog. (Write Dept. PQ-6 for your copy.)



OVERSTROM & SONS, INC.
2213 WEST MISSION ROAD • ALHAMBRA, CALIF.

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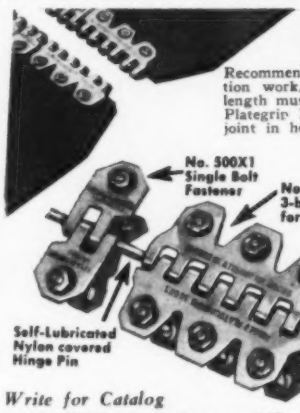

HINGED PLATEGRIP

Recommended for mines, quarries, construction work, storage yards — wherever belts length must be frequently changed. Hinged Plategrip Fasteners make a strong, flexible joint in heavy duty conveyor belts, trough naturally, ride smoothly over pulleys, yet can be separated by simply pulling the hinge pin. *Improved* design takes the new smaller diameter self-lubricating nylon sheathed cable hinge pins. No. 500X1 single bolt fasteners and No. 500X3 3 bolt fasteners (used at outside edges) to reinforce edges and aid troughing:

ARMSTRONG-BRAY & CO.
5394 Northwest Highway
Chicago, Illinois

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CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

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Contract Core Drill Division
MICHIGAN CITY, INDIANA

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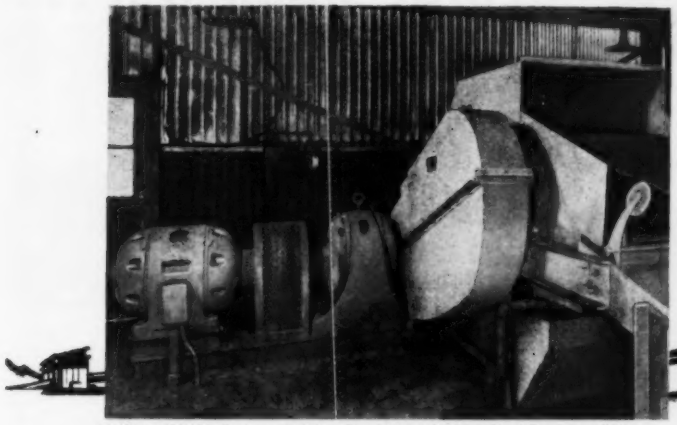
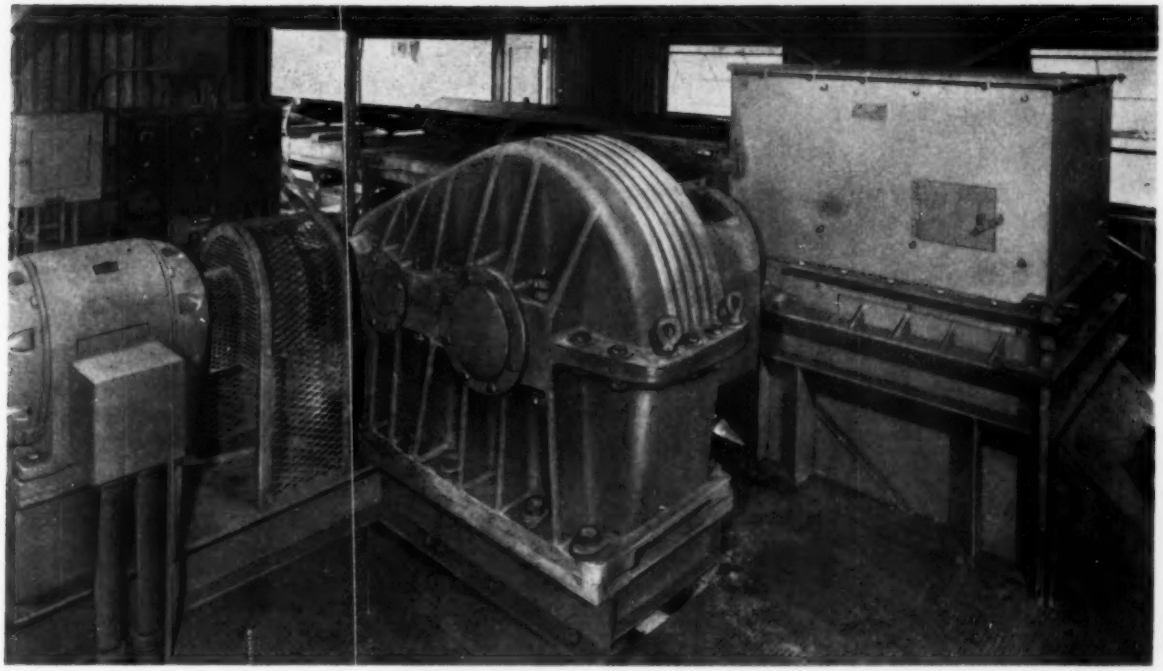
FOOTE BROS. DRIVES IN THE CEMENT INDUSTRY



...Move Cement Clinker at 2000 TONS PER HOUR

LINE-O-POWER Reducer Driving Tunnel Belt feeding Final Conveyor Belt.



MAXI-POWER Reducer Driving Final Conveyor Belt, Universal Atlas Cement Plant, Buffington, Indiana

Lake carriers get a fast turn-around when they load clinker at United States Steel Corporation's Universal Atlas Cement Plant at Buffington, Indiana, because the clinker loading belts driven by Foote Bros. Reducers have a maximum capacity of more than 4 million pounds per hour!

The 48" wide, 2445 ft. long inclined Final Conveyor Belt, driven by a Foote Bros. MAXI-POWER Parallel Shaft Drive, which is fed by two 36" wide Tunnel Belts equipped with LINE-O-POWER Drives, moves the fused raw material from mountain-high stock piles into the holds of boats at the rate of 2000 tons per hour.

This is tough, demanding service. Drives are subjected to massive shock and maximum peak loads... yet the Foote Bros. Drives have never been shut down for emergency repair or maintenance!

Dependability like this is a standard by-product of Foote Bros. drive know-how. Why not take advantage of our more than a century of experience and specialization in building high quality transmission products?

There's a Foote Bros. Drive made to meet your power transmission requirement. Ask your nearby Foote Bros. Authorized Distributor for information or assistance concerning your power transmission problems. He's ready to help you.

100 YEARS SERVING INDUSTRY 1859-1959

FOOTE BROS.

Better Power Transmission Through Better Gears

Find Your Nearest Distributor In The 'Yellow Pages'

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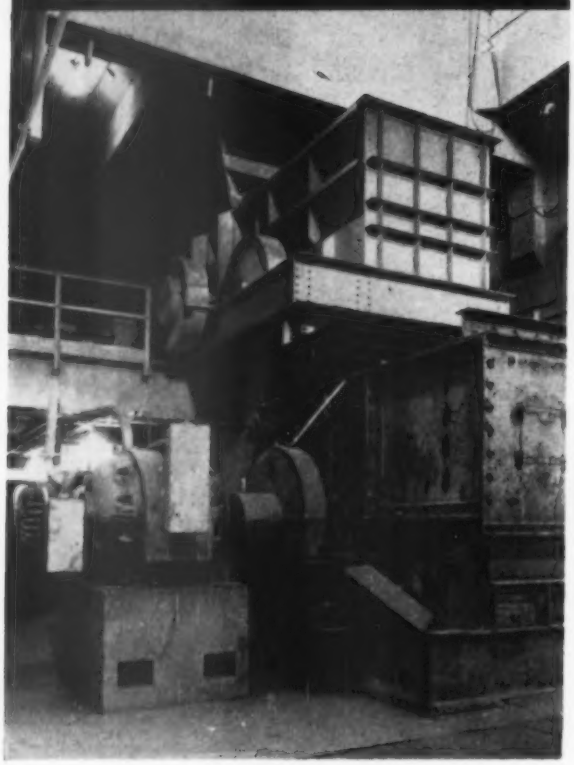

Non-Clog Bulldog Hammermill

Crushes 400 T.P.H. from 42" to 1" and under

This non-clog BULLDOG HAMMERMILL takes feed ore 42" and under containing 22% moisture, 13-15% silica. It reduces this material to a fineness of 1" and under at a rate of 400 tons per hour using only 400 h.p. Over the past 5½ years, the Bulldog Hammermill crushed an average of 166,500 tons between hammer resurfacings. Maintenance costs were only .0014 per ton.

Hammermills, Inc. can help you reduce the cost of your end product. For the name of the Hammermills' representative in New York, Chicago, St. Louis, Toledo, Dallas, Denver, Los Angeles and Melbourne, Florida, write us.

Manufacturers of: Hammermills for Primary and Secondary Crushing • Impactors • Jaw Crushers • Roll Crushers • Cone Crushers • Wobbler Feeders • Apron Feeders

HAMMERMILLS, INC.

Subsidiary of PETTIBONE Mulliken Corp

625 C Ave. N.W., Cedar Rapids, Iowa

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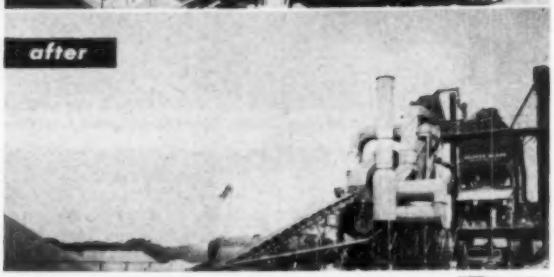
George stopped it . . .

(and saved money, too)



with a Bollard Dust Washer!

"Tried 2 other makes of collectors (top), but only Bollard '3-way action' (bottom) killed our dust", says George Slade, owner of this asphalt plant at Bridgeton, N. J. Fits any make plant. Ends complaints. Lowest price. Get the facts—write, or call collect, today!

BOLLARD ASPHALT PLANT DIVISION

THE COLONIAL IRON WORKS CO.

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Complete Asphalt Plants and Components since 1916.

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Winslow TRUCK SCALES

PIT AND PITLESS TYPES

CABINET DIAL

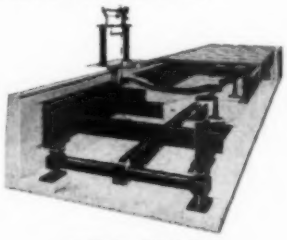
Weight indication available includes ball bearing poise weighbeams, direct reading and weight imprinting types, and dial equipment with or without weight printer.

Write or phone for more information

PHONE NORTH 1231

TYPE CS—PORTABLE—PITLESS

Type CS scales, pitless installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 50 tons. Platform sizes 18' x 9' thru 40' x 10', wood or steel deck.



TYPE S—PIT SCALE

Type S scales, pit installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 60 tons. Platform Sizes 22' x 9' thru 60' x 10' for wood or concrete decks.

WINSLOW GOVERNMENT STANDARD SCALE WORKS, INC.

4810 NORTH 25TH ST. TERRE HAUTE, IND.

SCALE MANUFACTURERS FOR OVER A HALF-CENTURY

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Increase grinding mill efficiency... with CF&I Grinding Media

The Image of CF&I helps assure increased output in grinding mill operations—through the use of long-wearing, tough CF&I Grinding Balls and Grinding Rods.

The special analysis steels used in these products give an ideal balance between hardness and toughness—thus affording optimum grinding ability plus maximum wearability.

CF&I GRINDING BALLS are hot-forged and carefully inspected throughout production and immediately before shipment to assure that they are free of surface pits, circumferential ridges or other surface imperfections. They have excellent resistance to both abrasion and impact, and operate economically in either high or low speed mills. Available in diameters from ¾″ to 5″.

CF&I GRINDING RODS are hot-rolled of a special long-wearing steel which minimizes both bending and premature breakage. All rod ends are square cut and rods are of proper length to fit the mill in which they will operate. All rods are machine straightened to assure maximum line contact between the rods for the full length of the mill. These properties help facilitate rod line-up in the mill and eliminate tangling of the charge. Available in ½″ increment sizes from 1½″ to 4″ in diameter and in various lengths.

For complete information and service on all CF&I Mining Products, contact the nearest CF&I sales representative.

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INCREASE YOUR MOVING CAPACITY in both Short and Long Stick operations UP TO 50% with

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that FIT ALL MAKES AND MODELS OF TRUCK CRANES

- ALLOW NEAR-CAPACITY LOADS TO BE MOVED OVER LEVEL AND RUGGED TERRAIN
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One Pair Single Tandem Units, Weight approx. 1360 lbs.
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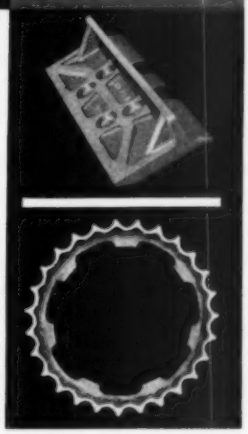
WITH COLUMBIA ARMOR-TOUGH TRACTOR PARTS



Columbia heavy-duty track shoes, sprocket rims, dozer blades, and dozer end bits are built for the toughest jobs. The harder the pounding, the harder and stronger these austenitic manganese steel parts become. Columbia Armor-Tough tractor parts pay big dividends in long wear and superior service on rugged jobs all over America. Fast, one order service too. Specify Columbia Armor-Tough for your next tractor replacement part order.

- HEAVY DUTY TRACK SHOES
- DOZER BLADES AND END BITS
- SPROCKET RIMS

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Columbia

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DIAMOND CORE DRILLING COMPANY
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E. E. Cooke, Proprietor
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TWIN CITY IRON & WIRE CO.
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For Fast Results . . .

ADVERTISE YOUR USED EQUIPMENT

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"The Marketplace of the Industry"

2 to 3 times Greater Thrust Capacity

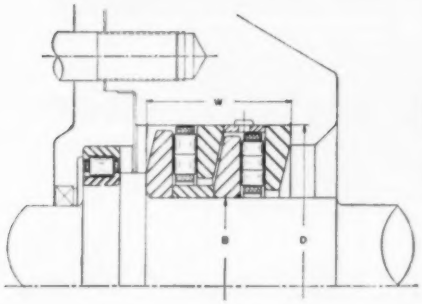
8 to 12 times Longer Life Expectancy

New ROLLWAY TANDEM THRUST BEARING

Using axial space along the shaft, rather than enlarging the housing diameter, this new Rollway tandem thrust bearing distributes the load over two or three stages of roller components. Gives 2 to 3 times more thrust capacity than conventional thrust bearings. Life expectancy is 8 to 12 times longer depending upon the number of stages.

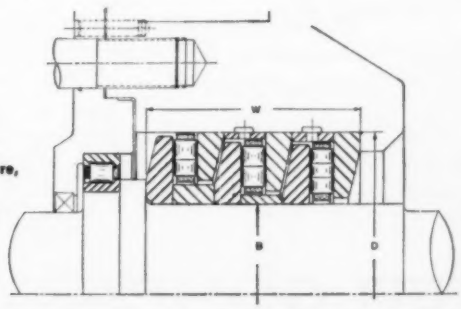
Each stage comprises a rotatable bearing plate . . . a bronze retainer with thru-hardened steel rollers . . . a compression sleeve . . . and a stationary bearing plate. The thrust load is applied to the first stage and is by-passed by each compression sleeve in turn to the remaining stage or stages.

Calculated deformation of the bearing plates distributes the load uniformly on all rollers. A greater number of rollers in the first stage carries about 60% of the load, without increasing the load per roller. Compression sleeves have cross-sectional areas proportional to the load imposed. Roller variance is held within one ten-thousandth inch.



TWO STAGE TANDEM

22 sizes, up to 17" bore, 34" O.D., and 2,325,000 lb. capacity at 100 rpm



THREE STAGE TANDEM

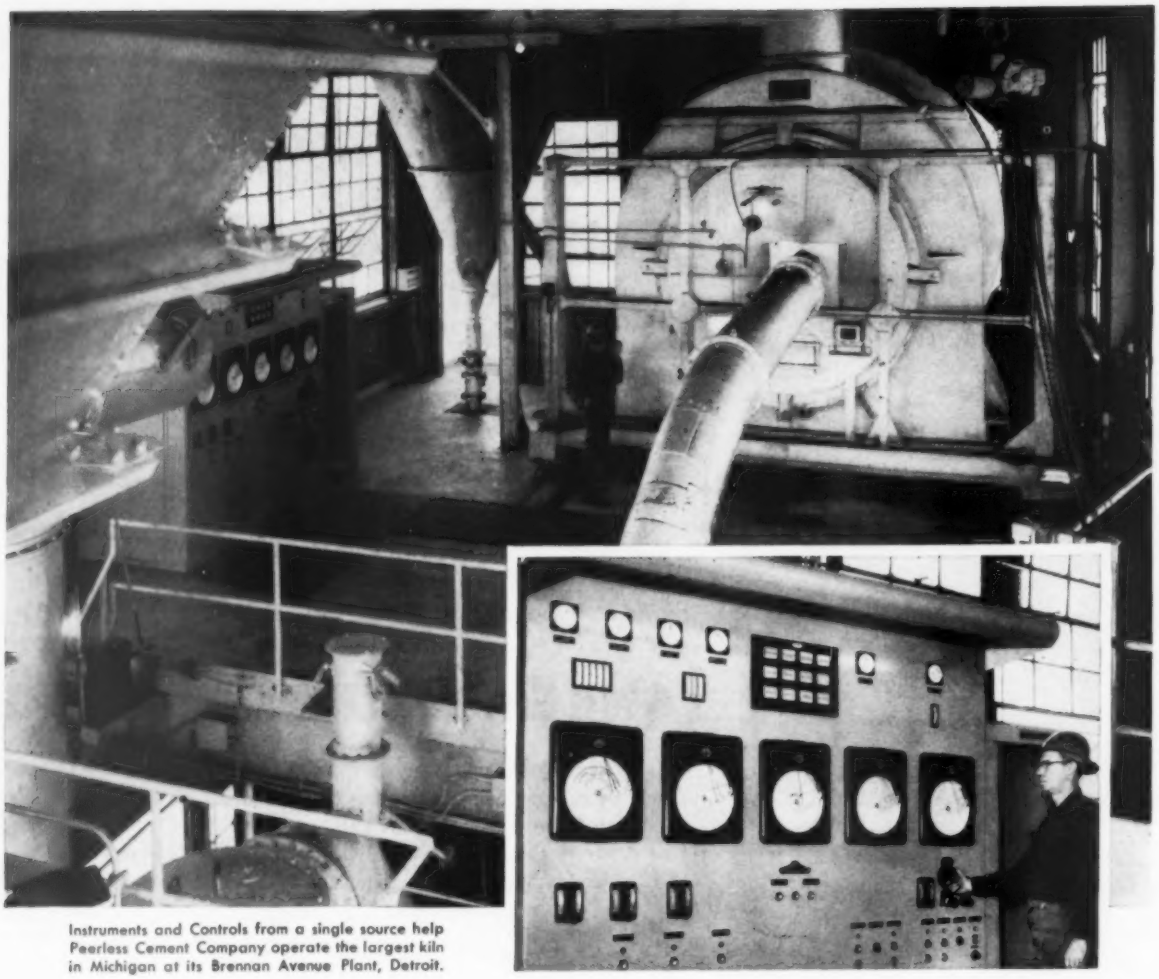
5 sizes, up to 17" bore, 34" O.D., and 3,410,000 lb. capacity at 100 rpm

Tandem Thrust Bearing manufactured by Rollway Bearing Company, Inc. under U.S. Patent Number 2,374,820.

Complete Specifications on Rollway Tandem Thrust Bearings, as well as other up-to-date information on bearing design is yours for the asking. See your Rollway engineer, or write: Rollway Bearing Company, Inc., Syracuse, N. Y.

ROLLWAY®
BEARINGS
COMPLETE LINE OF RADIAL AND THRUST CYLINDRICAL ROLLER BEARINGS

ENGINEERING OFFICES: Syracuse • Chicago • Toronto • Cleveland • Seattle • San Francisco • Boston • Detroit • Pittsburgh • Houston • Philadelphia • Los Angeles



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This giant kiln gives peak performance <u>longer</u> with Bailey Controls

The Peerless Cement Company of Detroit demands maximum capacity, uniform production and low fuel rate from its largest kiln . . . and Peerless gets it!

They do it with a Bailey Control System that gives them complete control of combustion, clinker cooler, and other kiln variables.

The system keeps continuous chart records of 11 important variables, including temperatures, drafts, air flow, kiln speed, fan speed, % oxygen, and % combustibles.

All this is done so dependably that the kiln often makes week-long runs without being touched.

All recording receivers in the Bailey System are plug-in components—easily removed, regrouped, or replaced to meet changing requirements. Additional records are added simply by plugging in receivers on existing recorder cases. Your Bailey Engineer can help you plan for peak performance — call him or write for your Bailey Kiln Control Folder.

C115-1

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To be responsible for planning, supervision and recording of all maintenance.

Applicants in their mid-thirties with engineering background and with maintenance experience in cement or related industries will be given preference.

Applications must be hand-written and are to present personal, educational and employment backgrounds.

Write Plant Manager,

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Some experience in sand processing and handling. He must be industrious and willing to grow with the plant. The plant is located in the south and established in a resort area.

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Cedarapids 6C, 1236 twin jaw portable secondary.
Cedarapids 1236 twin jaw crusher.
Cedarapids 1216 twin jaw crusher.
Cedarapids 1036 jaw crusher. Reconditioned.
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27½ ton, single-compartment 8' x 12' bin.
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Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conv. belting.

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Lorain MC-414, 20-ton Moto-Crane. Reconditioned.
Link Belt HC-90, 25-ton truck crane.
Michigan TLDT-20, 15-ton truck crane.

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2—Euclid 13-yd. bottom dumps. Good.
3—Euclid 46TD, 22-ton rear dumps.

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1—Caterpillar D-8 with push block.
1—Caterpillar D-7 with bulldozer, crane boom.
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Osgood 903, 2-yd., 24' boom, 20'6" stick.
Lorain 26, ¾-yd., 19' boom, 16' stick.

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Universal 5KW, D.C., 1200 RPM, 220-250 volts.
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Cat. D7700, 74 H.P. at 1000 PFM. Rebuilt.
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GM 3021C, 2-cylinder, new.
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105 cu. ft. Leroi Tractair with dozer, backhoe.
2—165 cu. ft. Ingersoll Rand gas portables.
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3—Ruggles-Coles Class #XA-18, double shell indirect-direct heat rotary dryers, 104" x 70' x ⅝" shell.
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8—Bucket elevators, 62' and 90' c-c.

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35 Ton Davenport 0-4-0 Mechanical Drive, Serial No. 2316. LeRoi RXIV 8 Cylinder Engine. Excellent Cond.

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2000' of 18", new, 4 ply, 28 oz. duck, ¼" by 1/32" rubber covers, 3500 p.s.i. tensile strength, immediate shipments.

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122 Murphy Diesel Power Unit, S/N 14843—190 HP. Recently overhauled—Good condition

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2—Allis Chalmers 8' x 100' Rotary Kiln.
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1—600 H.P., and one 1000 H.P. General Motors (EMD) Diesel Electric Switchers.

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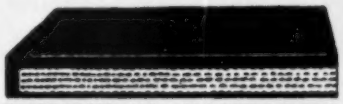

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Width	Ply	List Price Per Foot	Sale Price Per Foot
14"	4	$3.78	$2.94
16"	4	4.24	3.09
18"	4	4.69	3.42
20"	4	5.17	3.95
24"	4	6.08	4.43
30"	4	7.47	5.42
36"	4	8.85	6.43

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Width	Top Cover	Bottom Cover	List Price Per Foot	List Price Per Foot
14"	⅛"	1/32"	$4.35	$3.09
16"	⅛"	1/32"	4.92	3.49
18"	⅛"	1/32"	5.45	3.87
20"	⅛"	1/32"	5.97	4.41
24"	⅛"	1/32"	7.03	4.99
30"	⅛"	1/32"	8.62	6.13
36"	⅛"	1/32"	10.20	7.23
THE FOLLOWING BELTS ARE 5 PLY, 32 OZ. DUCK				
24"	1/8"	1/16"	$ 9.17	$ 6.68
30"	1/8"	1/16"	11.27	8.21
36"	3/16"	1/16"	15.23	11.09

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16"	4	5.04	3.60
18"	4	5.61	3.98
20"	4	6.14	4.54
24"	4	7.22	5.14
30"	4	8.87	6.31
36"	4	10.49	7.84
24"	5	8.47	6.01

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18"	4	6.14	4.37
20"	4	6.95	4.98
24"	4	8.18	5.83
30"	4	10.09	6.92
24"	5	9.47	6.58

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2—Vulcan 7' x 55', 5/8" shell.
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1—Rennenberg 5'6" x 50', 3/8" shell.
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1—Allis Chalmers 4' x 40'.
1—Allis Chalmers 4' x 30', 3/8" shell.
1—34" x 30', 5/16" shell.
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24"	1/8"x1½"	$4.95	$3.90
24"	1/8"x1/16" (5 ply)	$8.54	$4.78
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24"	1/8"x1½"	$7.79	$4.36
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1-100	G.E.	Slip Ring	1800	220
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10' x 234' long Kiln, ¾" shell
10' x 100' long Kiln, ¾" shell
8'8" x 70' Hardinge Dryers, ⅜" shell.
11' x 175' Traylor kiln, ¾" shell
10' x 78' Dryer, ¾" shell
9' x 100' Vulcan Kiln, ⅜" shell
8' x 125' Beth. Kiln, ⅜" shell
8' x 115' United kiln, ½" shell
7'6" x 100' Kiln, ½" shell
7'6" x 60' dryer, ½" welded shell
7' x 50' A-C dryer, ⅜" shell
6' x 7' x 100' Kiln, ⅞" shell
6' x 60' kiln
6' x 30' Louisville dryers
5'6" x 31', 4'8" x 33', ½" shell, dryers
3' x 24' Kiln, ⅜" shell

1—Kennedy 7' x 9' continuous ball mill, integral herringbone gear. 150 HP. 1948.

MILLS

BALL, Kennedy 7' x 9', 150 HP
ROD, Marcy 8' x 12', 350 HP
BALL, Traylor 8' x 11', 300 HP
ROD, Kennedy 4' x 8', 50 HP, EPD
ROD, Marcy 7' x 15', 4" liners, 300 HP
CONICAL, Hardinge 4' x 16"
BALL-TUBE, Allis-Ch. 6' x 16'
BALL, Kennedy 4' x 8', 50 HP, E.P.D.

HAMMERMILL, Penna. Crusher #5060. 400 HP, non-clog, 1952, unused

SPECIAL

4—Allis-Chalmers 5' x 22' ball tube mills, complete with 150 HP motors & drives.

CRUSHERS-PULVERIZERS

GYRATORY, Allis #322, 3", 30 HP
GYRATORY, Kennedy #49S, 12", 100 HP
JAW, 18" x 9", 20" x 6', 36" x 15"
ROLLER, Raymond, 66", 6-roll, 200 HP
PULV., B & W Type E-32, 75 HP
SAWTOOTH, Robinson #13, 36", 15 HP
DBL. ROLL, Allis 30" x 14", 25 HP

MISCELLANEOUS

BOILERS, Keeler 200 HP, 160 PSI
BUCKET ELEVATORS, 52' & 90' c-c
SCREENS, 4' x 6' Tyler
PUG MILLS, 150, 50, 25 HP
STORAGE BINS, welded steel, conical bottom, 6,000-80,000 gal.
REHANDLING BUCKETS, Owens ¾ cu. yd.

PERRY EQUIPMENT CORPORATION
1414 N. Sixth St. Phila. 22, Pa.
POplar 3-3505

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at ALPHA PORTLAND CEMENT PLANT, Manheim, W. Va.

1—Vulcan 9'x100'x5/8" shell Rotary Kiln
6—Vulcan 6'6"x60'x1/2" shell Rotary Kilns
1—Ruggles Coles 5'x28'x3/8" Rotary dryer with lifters
2—Mosser 4'x47'x5/16" shell Rotary dryers with lifters
1—Traylor 8'x11' Steel Lined Ball Mill
2—Bethlehem Foundry 7'x24' Compeb Mills 3 Compartment
2—Bethlehem Foundry 5'x22' Tube Mills
1—Allis Chalmers size 8K Gyratory Crushers
2—Allis Chalmers size 6K Gyratory Crushers
1—Non-clog 36"x50" Hammermills Inc. Type HM-05-NC Hammermill
10—Fuller Lehigh 42" racer type Pulverizers
1—Westinghouse 3000 KW Turbo Generator Set
1—Westinghouse 750 KW Turbo Generator Set
1—Sullivan Class WJ3—20"x12"x14" Compressor 1300 CFM @ 225RPM
1—Barber Greene Model 82A crawler type car loader
10—Bucket Elevators 30' to 90' centers steel housings
1000'—9", 12", 14", 16" Screw Conveyor

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6' x 32' Heatherington Dryer 50 H.P.
2—Battery Locomotives 4 Ton, 24" Gauge, Complete, M-G Sets.
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36" x 150' Conveyor w/Roller Brg. Idlers.
1 To 3 Cu. Ft. Rotary Vane Feeders.
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50 H.P. 100 R.P.M. Gear Motors.
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Telsmith 9x21 with 25 H.P. Motor.
Sturtevant #1 Rotary Crusher.
Sturtevant #1½ Rotary Crusher.
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Hardinge 6x12 Rod Mill.
Allis-Chalmers 4x6 Ball Mill.
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Niagara 2½ x 12' Single Deck Screen.
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3654 Jaw Crusher with 150 HP Motor
30" Merrick Weightometer

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One—14'-3" x 36", TELSMITH HEAVY DUTY APRON FEEDER, Driven by Gear Reduction Motor, New and never taken out of crate.

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VERY LOW PRICE

Steel Forms for Tunnel or Culvert Manufactured by Blaw-Knox Company
2 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for single tube
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4 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for twin tube
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9 yd.	Bucyrus-Erie	Dragline
5 yd.	Bucyrus-Erie	Dragline
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3½ yd.	P&H	Shovel
1½ yd.	Marion	Shovel
6 yd.	Lima	Dragline
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Construction Equipment
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1—H0D Hough Front End Loader New 1956

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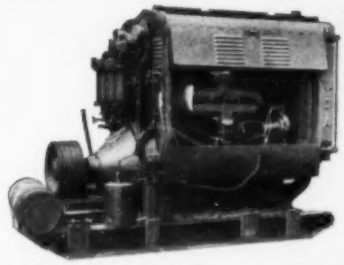

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This single unit portable crushing plant is completely overhauled. Made up of Apron Feeder, 2025 Roller Bearing Jaw, 3033 Hammermill, 4' x 10' Double Deck Screen, conveyor system and return wheel. All mounted on pneumatic tired chassis with tandem rear axle. Air brakes and front dolly. Powered by GM Twin Diesel.....$25,000.

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Box 550 Cedar Rapids, Iowa

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1—13" x 36" Type B Farrel-Bacon Crusher
1—#1030 Good Roads Portable Crushing Plant—96 H.P. Diesel Engine, Screen & Elevator
1—Worthington 6" Superior McCully Fine Crusher
1—Apron Feeder 36" x 16'-0"
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1—Syntron F-200 Vibrator
1—Link-Belt Slope Hoist, 48" x 48" Drum, Roller Bearings, Gear Reducer
1—3½ Yd. Clamshell Bucket—Blaw-Knox, Size 734
1—24" x 14" Allis-Chalmers Type B Crushing Rolls
1—3' x 8" Hardinge Rod Mill with Spare Liners
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1—36" x 11' Revolving Screen
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We build open and totally enclosed bucket elevators and belt conveyors to suit your needs.
Large stock chain, sprockets, buckets and conveyor pulleys—new and used.

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2—5' x 8' BALL TUBE MILLS

2—5' x 8' Kennedy Van Saun Air Swept Ball Tube Mills with disc feeders, fans, piping, all motors and electric eye mill level controls.

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Mayfield, Kentucky

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125-A Mich. loader, gaso.	$11,500.00
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3500 Manitowoc Cr. & Drag	34,500.00
802 Lima Sh. Cr. & Drag	34,500.00
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STONE CUTTER—Heavy Duty. Will cut Quartzite up to ten inches thick and 50 inches wide. Good as new. Hydraulic operated

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Phone Fulton 1-1103-4

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225 TON STEEL STORAGE BIN

W/70 foot high Bucket Elevator and 60 foot long Flight Conveyor, fully complete. Used but in good condition.

Price and further information on request.

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40	TD 11558	22½ tons	Indianapolis, Indiana
49	FD 6129	15 tons	Hazelton, Pennsylvania
49	FD 6395	15 tons	Hazelton, Pennsylvania
49	FD 8984	Water Wagon	Indianapolis, Indiana
49	FD 7761	15 tons	Lancaster, Pennsylvania
49	FD 8179	15 tons	Lancaster, Pennsylvania
49	FD 10178	15 tons	Lancaster, Pennsylvania
49	FD 10179	15 tons	Lancaster, Pennsylvania
49	FD 10180	15 tons	Lancaster, Pennsylvania
49	FD 6753	15 tons	Indianapolis, Indiana
49	FD 7471	15 tons	Indianapolis, Indiana
63	TDA 21201	22½ tons	Ogden, Utah
63	TDA 21205	22½ tons	Ogden, Utah
63	TDA 21709	22½ tons	Ogden, Utah
63	TDA 21203	22½ tons	Ogden, Utah
63	TDA 21206	22½ tons	Ogden, Utah
63	TDA 21216	22½ tons	Ogden, Utah
63	TDA 21204	22½ tons	Ogden, Utah
63	TDA 21708	22½ tons	Ogden, Utah
49	FD 10108	15 tons	Indianapolis, Indiana
49	FD 10177	15 tons	Indianapolis, Indiana
49	FD 7245	15 tons	Indianapolis, Indiana
49	FD 7239	15 tons	Indianapolis, Indiana

BUCYRUS ERIE
6½-8 Yard Shovels for Sale

Model	Serial No.	Location	Year
150 B	116029	Ogden, Utah	1957
150 B	116027	Ogden, Utah	1957
150 B	116028	Ogden, Utah	1957

1—Northwest 60D Combination Shovel, Dragline & Crane—Serial 18501—Location: Ogden, Utah. 1957 Machine
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MESABA SERVICE & SUPPLY COMPANY
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USED 15" SEMI-PORTABLE PLAIN SUCTION HYDRAULIC DREDGE, BOOSTER PUMP AND AUXILIARY EQUIPMENT

Dredge

Main hull, 4 section steel, 68'x 26'x 4'6" overall. Separate steel sponsons forward for supporting lifting frame. Dredge pump, 15" Amsco, Form 44. Direct connected to Allis-Chalmers 500 hp., 505 rpm., 4600 volt, 3 phase, 60 cycle wound rotor motor with controls. Hoist, 3 drum Thomas with variable speed motor and controls. Dredge pump and main piping partly worn and partly dismantled. Some spare parts.

Shore Booster Pump

15" Amsco H-40, direct connected to G.E. 450 hp., 450 rpm., Form M, 440 volt, 3 phase, 60 cycle motor with controls. Some spare parts.

70 Steel 2-Tank Pipe Line Pontoons

Approximately 14'6"x 8' overall. Good condition.

570 Feet 16" OD Pipe in 50' Lengths, New condition

Price Lot $35,000.00

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1—Rennenberg 6' x 60' Rotary Kiln, 2 tires, 3/4" shell.

2—Abbe 5' x 16' Ball Mills.

3—Bucket Elevators: 125', 32', 30'.

2—Aurora 24" Vertical Centrifugal Pumps, 200 HP motors, 500 gpm, 125' head.

1—Bemis Automatic Bag Packer, Sewing Machine, Conveyor and Flattener.

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18—Steel Buildings 20' to 80' wide, x 60' to 140' long.

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4500 Manitowoc 5 Yd. H.L. Shovel
1201 Lima 3½ yd. Standard Shovel
111-M Marion Standard & H.L. Shovels
3500 Manitowoc Standard & H.L. Shovels
54-B Bucyrus Erie Standard & H.L. Shovels
Large selection of smaller Shovels & Draglines available
Model T-650 Reich Heavy Truck Mounted Rotary and Down-The-Hole Drill
McCarthy & Compton Coal Auger Drills
Euclid Trucks, Truck Cranes, Dozers, Attachments

FRANK SWABB EQUIPMENT CO., INC.

313 Hazleton Nat'l Bank Bldg.

Hazleton, Pa. **GLadstone 5-3658**

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1 Barber-Greene Model 879 asphalt finisher with LeRoi gasoline engine, s/n: 879-8-7. Excellent condition, selling price $7500.00
1 Barber-Greene Model 879A asphalt finisher with LeRoi gasoline engine, s/n: 52-258. Completely rebuilt. Excellent condition. Selling price $10,500.00
1 Barber-Greene Model 804 Mix-All asphalt unit, s/n: 804-856. Complete and in excellent condition, used on one short job, powered with Wisconsin VE4 engine, selling price $5,000.00
1 Model 44-C Barber-Greene ditcher, 18" x 7' boom, with follow-up scraper, powered with six cylinder Buda gasoline engine, s/n: 44-48-10. Good operating condition. Selling price ..$2,500.00
1 Littleford 1200 gallon asphalt distributor, with #99—10 ft. spray bar, with two extra 4 ft. spray bars, powered with eight cylinder V-8 Ford Engine (our equipment No. 1977) No truck, but ready for mounting on truck $1,950.00
1 3½ cu. yd. Model IDSAD Scoopmobile, front end loader, mounted on four pneumatic tired wheels, powered with Cummins Diesel engine, serial #228. Excellent condition; practically new. Selling price $19,000.00

These prices are all f.o.b. our Yards, St. Louis, Missouri

ALLIED CONSTRUCTION EQUIPMENT COMPANY

4015 Forest Park Ave. St. Louis 8, Mo.

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2—American heavy duty, band type friction dragscraper hoists. Cap. rear drum 5000# @ 600 FPM. Front Drum—12,000# In-haul speed—250 FPM.

Excellent condition — with or without power.

SPECIAL PRICE—no motor $3,750.00

SPECIAL PRICE with 125 HP electric motor $6,500.00

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CORAOPOLIS, PA., BOX 43-P, (Sub. of Pittsb.)
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NEW YORK 7, N. Y., 30-P Church St.

A SPARK CAN BE A DEADLY MISSILE

Such a little bit of carelessness can cause such a great amount of damage.

Loss of life, loss of vacation lands, loss of timber and watersheds can result from one cigarette thoughtlessly flipped from a car window, or one burning match dropped beside the road.

During these fire hazard months, a spark of any kind can be a deadly missile. And every year, our forest areas become more and more vital to the nation's welfare.

So be extra careful this year. Use your car ash tray. Douse your campfires. Be sure all fires are out, dead out. Be sure *you* don't cause a shameful forest fire. (Every year, some people do. 9 out of 10 forest fires are still man-caused.)

Remember **Only You Can... PREVENT FOREST FIRES!**

Like other American business firms, we believe that business has a responsibility to contribute to the public welfare. This advertisement is therefore sponsored in cooperation with The Advertising Council and U. S. and State Forest Service

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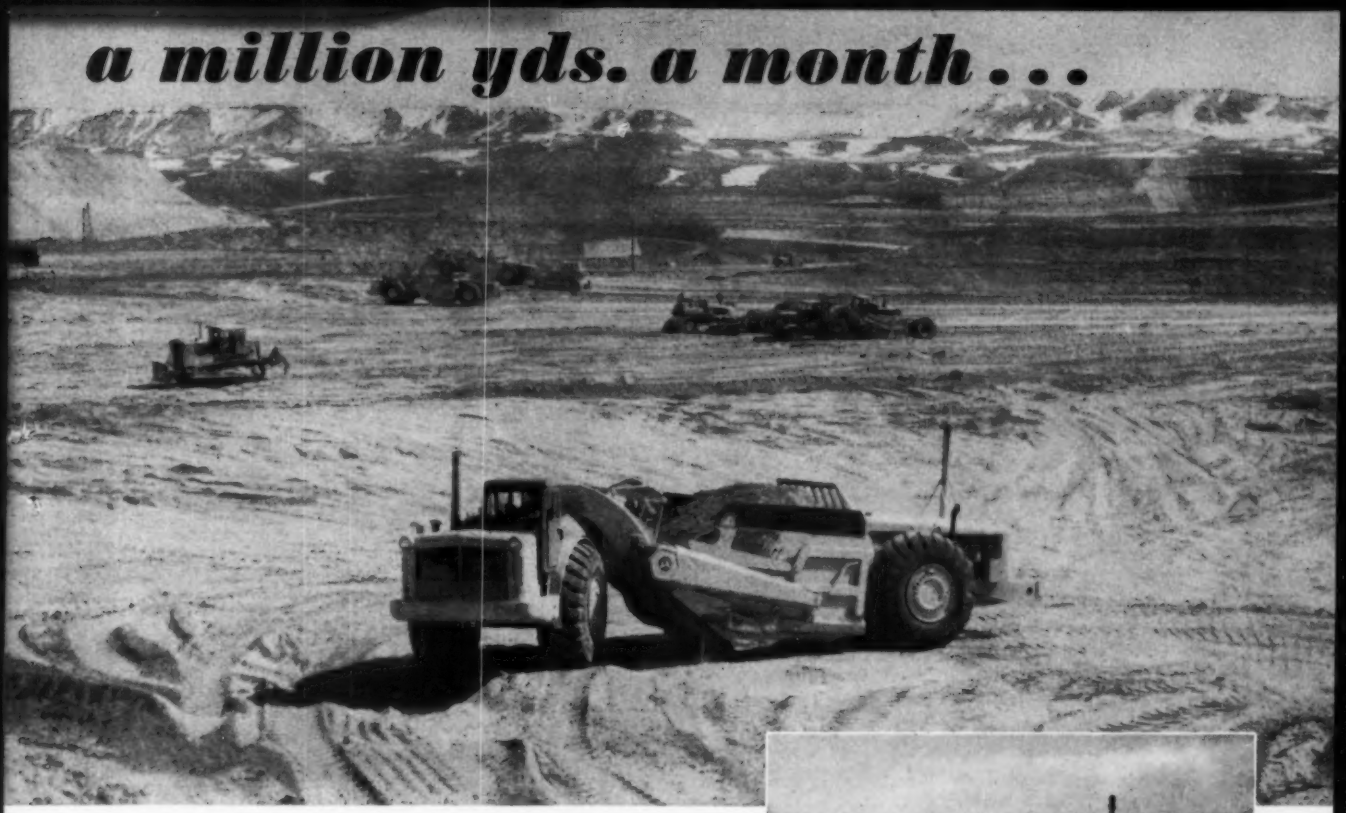
a million yds. a month . . .



moved by Euclid "Twins"

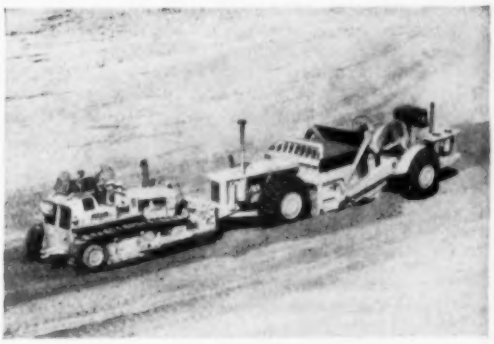
At a mining operation in central Wyoming, a fleet of 18 Euclid scrapers is removing overburden from uranium ore at a rate of a million cu. yds. a month . . . nearly 21 million cu. yds. will be moved to uncover the ore body. It's a big, tough job to move that quantity of heavy sand over a mile of adverse grades up to 12%.

Maco Construction Co. of Rawlins, Wyoming, contractor on this stripping project, bought 12 Twin-Power "Euc" Scrapers of 24 yd. struck capacity to maintain high speed production. With two engines and all-wheel drive, these scrapers have the power and traction needed to move big loads up steep grades from pit to dumping area. Twin-Power is paying off in the big performance of Maco's five TC-12 Euclid crawler tractors, too—they're used for push loading this all-Euclid fleet of scrapers.

Wherever big tonnages must be moved on mine, quarry, industrial and heavy construction work, Euclid equipment provides more work-ability and better return on investment. The dealer in your area will be glad to supply facts and figures on Euclid rear-dump and bottom-dump haulers, scrapers, crawler tractors and front-end loaders.

EUCLID Division of General Motors, Cleveland 17, Ohio

Big power and big capacity pay off in big production . . . Euclid TC-12 Crawler Tractor has 2 engines that deliver 425 net h.p. . . . "Twin" Scraper of 24 yd. struck capacity also has 2 engines (563 total h.p.) and all-wheel drive with separate Torqmatic Drives for each axle.



GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

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Lima 1250 3½-yd. Shovel nears end of million-and-a-quarter-yd. excavating job on highway reconstruction project near Knapp, Wis.

"LIMA 1250 moves half million yards of rock—at 270-300 yards hourly!"

says Lawrence Gerke, Wisconsin contractor

The job was tough, the schedule tight. "In only 2 miles," says contractor Lawrence Gerke, of Merrill, Wis., "we had to excavate a million and a quarter yd. . . . almost half of it rock!"

High performance, low maintenance

The project involved reconstruction on U. S. Interstate 94 near Knapp, Wis. Gerke needed a high performance machine with low maintenance requirements. He says, ". . . After considerable analysis of equipment, we purchased a Lima Type 1250 for rock excavating. In many cases no blasting was done. Yet, working in this material, the Lima constantly averaged 270 to 300 yd. per hour. When shovel work was completed, the 1250 was easily converted in the field to a dragline."

The crawler-mounted Type 1250 has turned in outstanding performances everywhere as a 3½-yd. shovel, 85-ton crane, and variable dragline.

Air-controlled precision

Main operating and auxiliary functions are air-controlled for smooth, precision performance at full capacity operation. Choice of diesel engine or electric motor with torque converter.

Other features and available equipment include: Independent propel, extra-high-speed hoist attachment, third drum, power reversing hoist drum, two types of rigid and folding gantries. The 1250 can be knocked down to units of less than 60,000 lb. for haulage.

Whatever your job, there's a Lima type and size exactly right—½ to 6-cu. yd. shovels, cranes to 110 tons, draglines variable. Learn now why so many contractors agree with Lawrence Gerke when he says, "We are completely satisfied with the operation of our Lima." See your nearby Lima distributor or write to us.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

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5932

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

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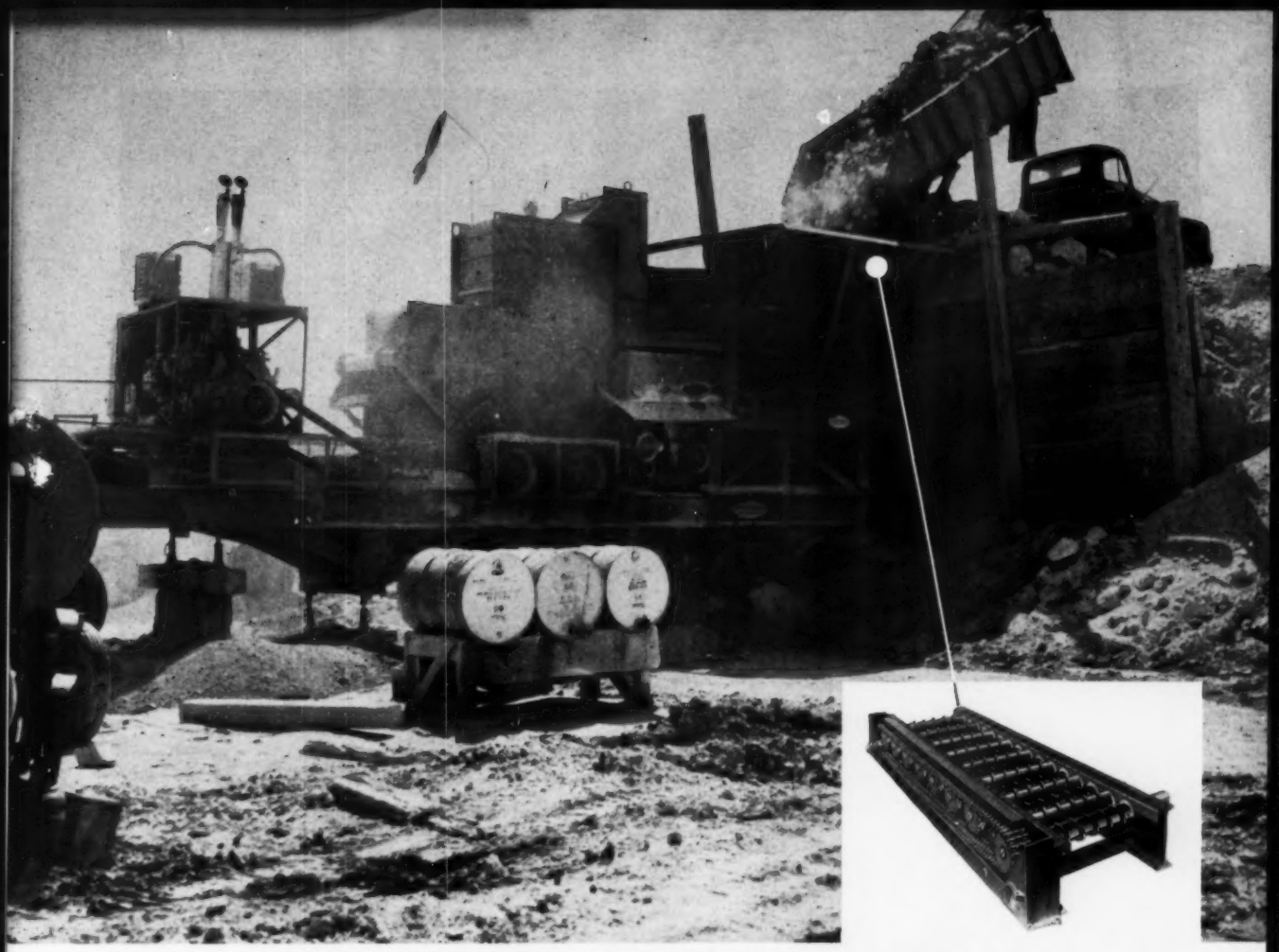

Universal Wobbler Feeder-Impact Master combination in the Kaser Quarry, Red Oak, Iowa. Kaser, one of the largest producers of aggregate materials in Iowa, uses the plant to produce Type A asphalt crushed rock aggregate.

This Universal plant opened a new profit source for Kaser Quarry

Kaser's Red Oak Quarry is now producing Type "A" asphalt aggregate — a material they were not able to produce until they installed their new Universal Wobbler Feeder-Impact Master.

Type "A" asphalt aggregate calls for clean material. However, the Red Oak quarry-run material contains a substantial percentage of fines and wet clay — normally hard to clean.

In a single operation, the Wobbler Feeder removes the fines and clay — feeds only clean rock to the Impact Master.

Wobbler Feeder Scalps as it feeds

Patented elliptical bars, set in alternate vertical and horizontal positions rotate at a constant speed in the same direction, moving the load forward. A tumbling rocking motion is set up, sifting fines and clay through the spacings between bars — only clean oversize reaches the crusher.

In Kaser's operation, material passing through the Wobbler bars is further processed giving 100% useable products.

The exclusive Universal Wobbler Feeder has been job-proved throughout the world in almost every kind of material.

It's a brute for punishment — the bigger the load the better it works — operates free of noise, vibration or stress. It's easy to install, requires little head room — provides high capacity with low horsepower. There's a size for every need — ask your Universal Distributor to show you how the Wobbler Feeder has solved hundreds of feeding problems . . . and how it can be a profit producer for you.

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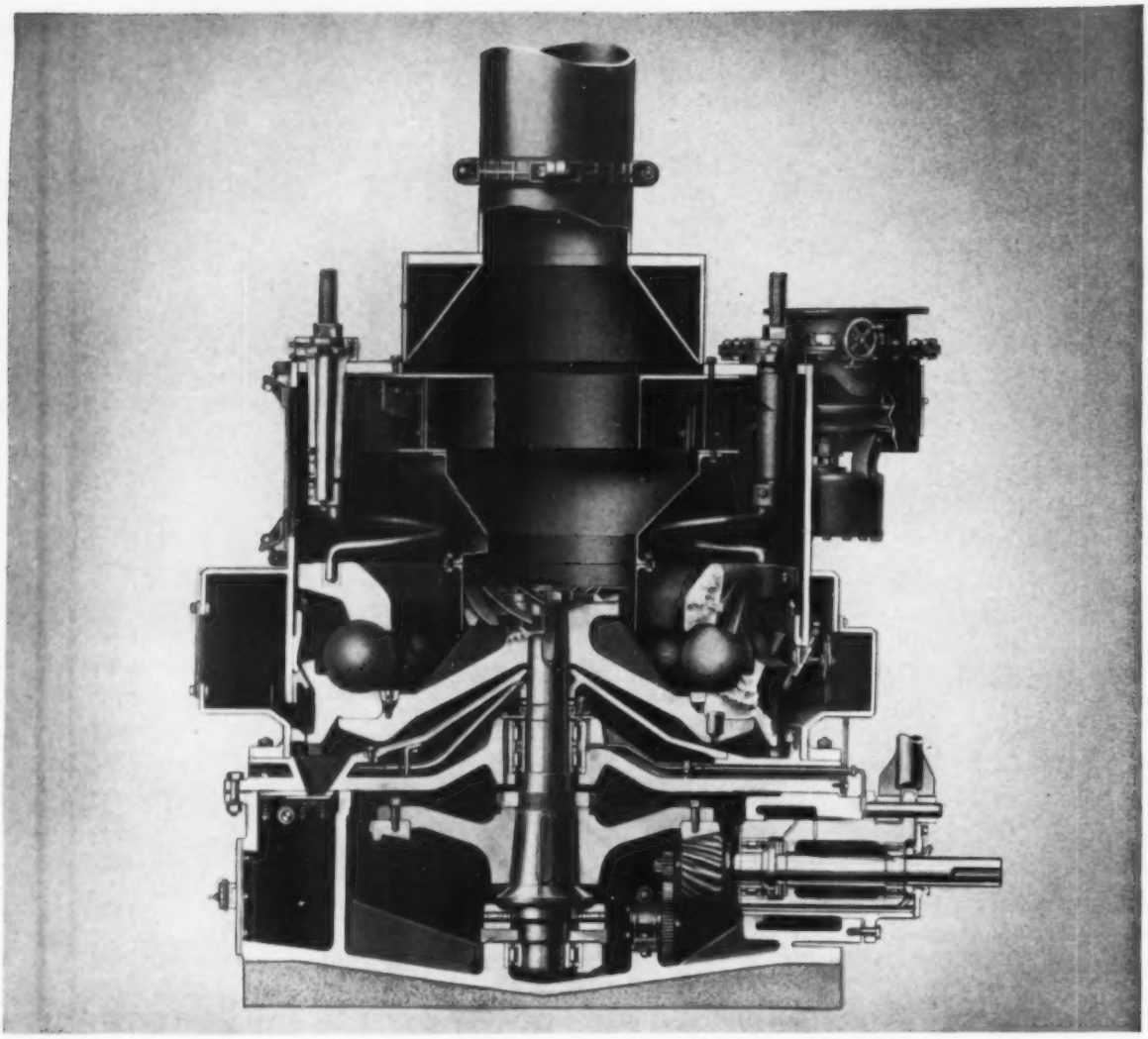
Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois



Low pulverizer maintenance assures long continuous operation in direct kiln firing

B&W Pulverizers for the direct firing of rotary kilns are engineered and built to give long, uninterrupted service with minimum maintenance. The pulverizer is compact, self-contained, and fully enclosed. Grinding elements are made of long-life, special wear-resistant metals, and there are no bearings or parts in the grinding zone to be lubricated. The helical reduction drive with anti-friction bearings is isolated completely from the dust and high temperatures of the grinding zone. Lubrication is automatic. The result—less wear and tear on vital operating parts—and less maintenance.

No dismantling of pulverizer or piping is necessary during scheduled shut-downs to replace grinding elements. Large, quick-opening access doors in the pulverizer housing permit speedy inspection and removal of parts.

These B&W design and maintenance features, backed by years of satisfactory performance, assure continuous, trouble-free service in modern kiln operation. Write for additional information to the Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

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B&W THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

Farval spray lubrication system keeps A-C ball mill running smoothly

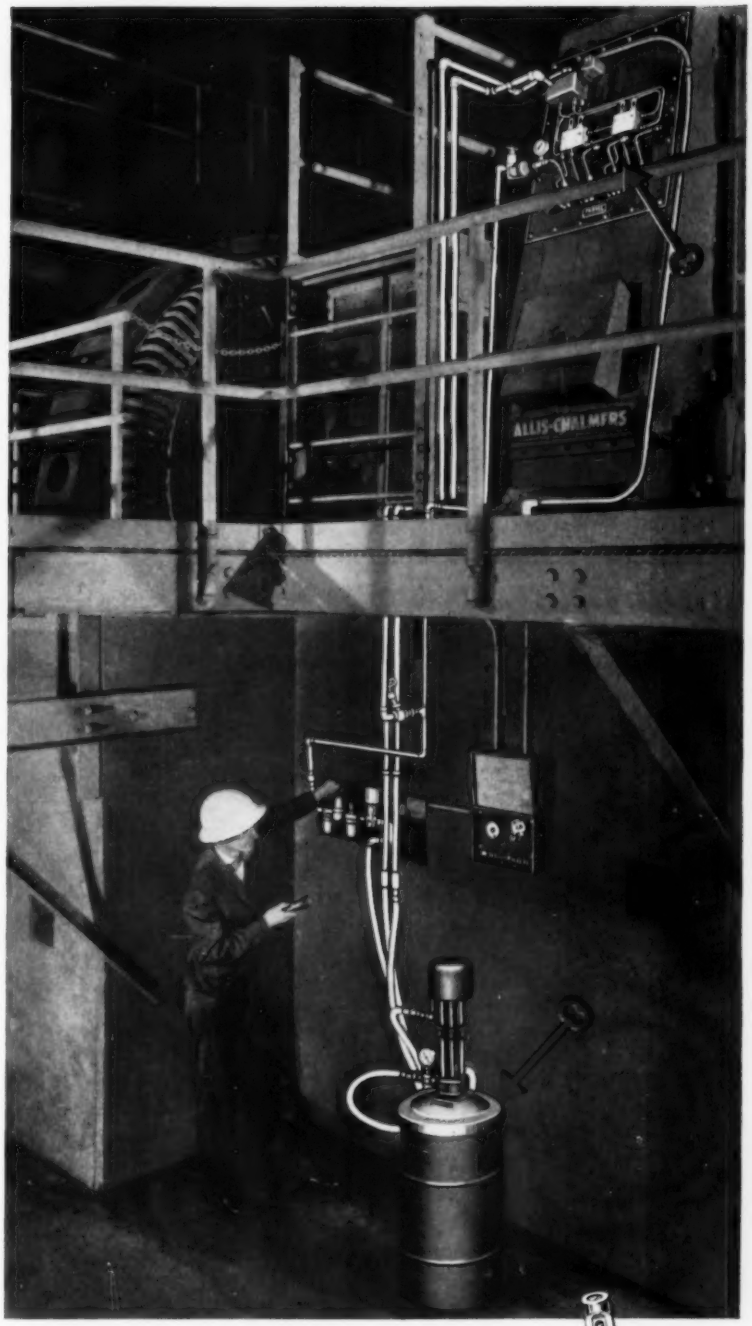
Inspecting the new installation of a Farval spray lubrication system on an Allis-Chalmers ball mill at Marquette Cement Company's Milwaukee plant is Erv Klovers, project engineer at Allis-Chalmers.

Mr. Klovers' task was to find an economical and dependable lubrication system to guard the large diameter, wide-faced gears that power the ball mill. So he contacted Farval and together we designed the original spray lubrication system for ball mill gearing. It was completely flexible in arrangement and position—fit his requirements to the letter—showed savings in both lubricant and labor costs.

With Farval, gears can be sprayed with the proper lubricant in any amount specified, as often as necessary—without waste or mess.

Hooked up to existing compressed air sources, Farval Spray Valves deliver the lubricant to tooth surfaces through controlled air delivery. Large porting in Farval Dualine valves ensure correct lubricant supply with minimum pressure-drop and very minimum grease separation.

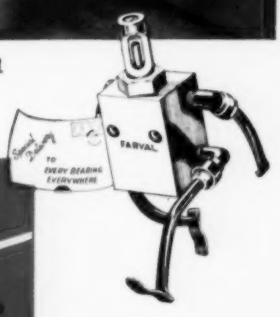
This simple, inexpensive but thorough lubrication system can help you cut maintenance costs as it has for hundreds of others across the nation. See what a Farval system can do for you by asking for Bulletin 26-S. Write The Farval Corporation, 3280 East 80th Street, Cleveland 4, Ohio.



FARVAL—Studies in Centralized Lubrication No. 231

KEYS TO ADEQUATE LUBRICATION

Wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.



Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

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GOING GRANULAR?

Acclaimed the "BEST" when introduced years ago... KRAFT-lok is still recognized as the "BEST" today!

switch to KRAFT-lok® bags!

89.6% of our customers who used L. C. Sleeves and other internal sleeve type bags have switched to KRAFT-lok — without any increase in cost.

The integral construction of this exclusive Kraft Bag feature solves all those tricky closure problems peculiar to bagging granular material.

KRAFT-lok also gives you the extra extension, the extra protection, and the extra production you simply cannot get in conventional type valve bags.

For demonstration without obligation . . . fill out coupon below, attach to your Company letterhead and send to us at once:

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COMPANY_____

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10 good reasons

why packers of granulated fertilizer prefer KRAFT-lok Bags:

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3. Prevents torn sleeve particles from contaminating material.
4. Speeds up filling operations by more efficient "venting."
5. Slows up spilling in filling.
6. Reduces leakage in closing.
7. Actually seals material inside bag automatically.
8. Minimizes sifting in handling.
9. Makes a cleaner, more satisfactory package in all ways.
10. Saves dollars all around.

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